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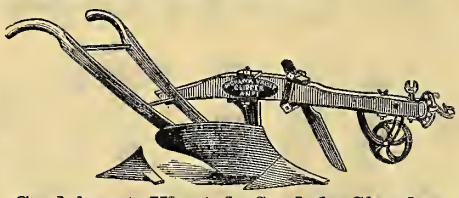

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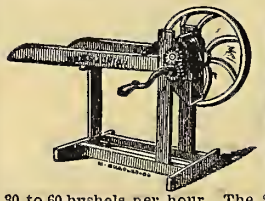

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AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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HUNTING THE FOX.—*Drawn and Engraved for the American Agriculturist.*

The fox-hunting scenes given above, will strike those who are familiar with fox-hunting in England, or in the few parts of this country, where the fox is hunted for sport, as very unlike the real thing. In many states the fox is regarded as "vermin," and is hunted to get rid of him as a pest, and also for his skin. The hunters take advantage of the habit foxes have of running around and around, when pursued by hounds, in nearly the same course. The majority of foxes so pursued in a given tract of country, will take the same route, provided they are not too hard pressed, otherwise they will make off across the country, therefore slow dogs are the best. The hunter goes on foot, often alone, and carries a gun. His object is to get in the course of the fox, and shoot him as he makes his circuit, or crosses from one hill or piece of woodland to another. Seldom more than two or three dogs are used, oftener only one. The skin being carefully removed, is drawn flesh side out upon a board of the proper size and shape, stretched tightly, and fastened with nails. The skin of the red fox varies in price from $1.00 to $2.50. They are mostly sent to Russia. The few used here are so changed by dying, as to be unrecognizable. Cross and Silver, or Black foxes, varieties of the Red, but very different in color, are much more valuable, the first being worth $5.00 and upward, while the Silver or Black will bring from $50 to $100 each, according to quality, being always scarce, fashionable, and high-priced.

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Calendar for January.

Day of Month.	Day of Week.	Boston, New England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n sets.
		H.M	H.M	H. M.	H.M	H.M	H. M.	H.M	H.M	H. M.
1	S	7 30	4 38	9 37	7 24	4 44	9 39	7 19	4 49	9 41
2	S	7 30	4 39	10 43	7 24	4 45	10 43	7 19	4 50	10 44
3	M	7 30	4 40	11 50	7 24	4 46	11 49	7 19	4 51	11 49
4	T	7 30	4 41	morn	7 24	4 47	morn	7 19	4 52	morn
5	W	7 80	4 42	0 57	7 24	4 48	0 55	7 19	4 53	0 53
6	T	7 30	4 43	2 11	7 24	4 49	2 7	7 19	4 54	2 4
7	F	7 30	4 44	3 30	7 24	4 50	3 21	7 19	4 55	3 17
8	S	7 30	4 45	4 46	7 21	4 51	4 40	7 19	4 56	4 33
9	S	7 30	4 46	6 5	7 24	4 52	5 58	7 19	4 57	5 51
10	M	7 29	4 47	7 14	7 24	4 53	7 7	7 19	4 58	6 59
11	T	7 29	4 48	rises	7 23	4 54	rises	7 18	4 59	rises
12	W	7 29	4 49	6 41	7 23	4 55	6 45	7 18	5 0	6 49
13	T	7 28	4 50	7 57	7 23	4 56	7 59	7 18	5 1	8 2
14	F	7 28	4 51	9 8	7 22	4 57	9 10	7 17	5 2	9 11
15	S	7 27	4 53	10 16	7 22	4 58	10 16	7 17	5 3	10 16
16	S	7 27	4 54	11 21	7 22	4 59	11 19	7 17	5 4	11 18
17	M	7 26	4 55	morn	7 21	5 0	morn	7 16	5 5	morn
18	T	7 26	4 56	0 26	7 21	5 1	0 24	7 16	5 6	0 21
19	W	7 25	4 58	1 29	7 20	5 3	1 26	7 15	5 7	1 22
20	T	7 24	4 59	2 36	7 19	5 4	2 31	7 14	5 8	2 25
21	F	7 23	5 0	3 38	7 18	5 5	3 32	7 14	5 9	3 26
22	S	7 22	5 1	4 44	7 18	5 6	4 27	7 13	5 10	4 30
23	S	7 22	5 3	5 42	7 17	5 8	5 34	7 12	5 11	5 26
24	M	7 21	5 4	6 29	7 16	5 9	6 22	7 12	5 12	6 15
25	T	7 20	5 5	7 8	7 15	5 10	7 2	7 11	5 13	6 55
26	W	7 20	5 6	sets	7 15	5 11	sets	7 10	5 15	sets.
27	T	7 19	5 7	6 22	7 14	5 12	6 27	7 10	5 16	6 30
28	F	7 18	5 9	7 30	7 13	5 13	7 33	7 9	5 17	7 35
29	S	7 17	5 10	8 35	7 12	5 15	8 36	7 8	5 19	8 37
30	S	7 16	5 11	9 39	7 12	5 16	9 38	7 8	5 20	9 38
31	M	7 15	5 13	10 50	7 11	5 17	10 48	7 7	5 21	10 46

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
1st Quart	4	10 40 mo.	10 28 mo.	10 16 mo	10 4 mo.	9 34 mo.
Full M'n	10	1 39 mo.	1 27 mo.	1 15 mo	1 3 mo.	0 33 mo.
3d Quart.	18	4 5 mo.	3 55 mo.	3 41 mo	3 29 mo.	2 59 mo.
New M'n	26	8 58 mo.	8 46 mo.	8 34 mo	4 22 mo.	3 52 mo.

AMERICAN AGRICULTURIST.

NEW YORK, JANUARY, 1876.

In this Centennial Year comparisons are being drawn between the present condition of the country and its industries, and their condition a hundred years ago. As compared with many other industries, agriculture does not show a corresponding advance, either in its methods, or its profits. It costs about as much to raise a bushel of corn or wheat to-day, as it did a century ago, and we raise less upon an acre of ground than formerly. On the other hand, a shoe now made wholly by machinery, from the tanning of the hide up to the polishing of the sole, and putting in the eyelets, is produced with very much less labor than a few years ago. But it costs as much to the wearer; the saving is distributed among the thousands of people, whose labor all goes to help in producing the shoe, and they are better off in consequence. The farmer who gets the same price for his wheat that he did many years ago, and does not raise it for any less, is no better off. The world is vastly richer than it was a hundred years ago, but the wealth is not in farmers' hands. It is doubtful if there is a farmer in the world who is worth a million dollars, or a tenth of that sum, who has made it by farming. But there are thousands of persons who have made fortunes by manufactures and trade. The labor of the steam-engine has made the bulk of the wealth of the world. Steam is everywhere, except on the farm. The steam-engine, the silent, but very valuable labors of chemistry, and scores of other helps in producing wealth, and lessening manual labor, are at work everywhere but there. It may be that this cannot be helped, but it would be strange if every other industry, except farming, is capable of improvement, and that this is bound to stay where it is, if it does not even go backward. It is a fact that farmers are not sufficiently well paid for their labor. The reason, or one reason, must be, that their labor is not good enough, or sufficiently intelligent. A man who now makes shoes by hand, is a poor man, and must remain so. He can not stand the competition with machinery. The farmer works too much with his hands, and he suffers in competition with other industries, in which handwork is superseded by steam or other power. What is the remedy?—It can not come in a day. It must come only through greater intelligence and enterprise. These are gained by reading, study, and education. Farmers, as a general thing, do not read as much as mechanics. But one in a hundred reads a really good, trustworthy, agricultural paper, or meets in a farmers' club, to discuss questions of practical interest to him. The rest are not well versed in matters pertaining to their own business. They have not faith in it. They have not yet learned that there is a better method of investing their savings than in the bank and in stocks, and that it would be far better to invest it in making their land more fertile, in draining and enriching their fields, and that it is far cheaper and better for them to raise forty bushels of wheat from an acre of ground, than to get the same quantity from three acres. It is not by fighting against, or opposing the advances of other industries, but in making their own less laborious and more profitable, that farmers can hope to improve their own condition. We believe the future to be full of promise. There are thousands of the better class of farmers, intelligent and earnest in their work, who are in comfortable circumstances, if they are not what is called rich. Year by year their crops grow larger, and their farms better and more valuable, and their example and influence benefits and stimulates others. It is a good time just now to study, how we can make our work more profitable, remembering that it is only work thoroughly well done that can be well paid for, and that only is well done, which is done in the best and cheapest manner. But a farmer who keeps no accounts, works in the dark, and can not tell whether he is doing good or profitable work, or not, and now is a good time to begin to keep accounts.

Hints about Work.

An Account should be opened with every field upon the farm, and with every kind of stock kept, commencing with the first of the year. Each field should be numbered or named, and whatever labor, seed, or manure, goes into or upon that field, should be charged at fair prices, just as if it were sold to a neighbor. When the crop is sold or used, the proceeds should be credited to the field just as if it had been received in payment from a neighbor. If some of it is fed to stock, the stock should be charged with the value, as if it had been bought for them, and the field credited with the amount. To commence the accounts, an inventory should be made, and the value of everything fairly estimated and put down. If any work has already been done upon a field, that should be charged to it. It may not be very easy at first, but very soon will be, and when once it has been begun it will be kept up. Do not mind some mistakes at first.

Feeding Stock.—Stock should be well fed at this season. Do not spare feed, but do not waste any. It is easier to keep flesh on an animal now than to put it on in March.

Buildings.—Perfect cleanliness should be the rule in all stables, pens, and sheds. Filth is the most frequent cause of disease. Too much warmth is not healthful. Pure air, dry beds, and clean skins, will keep well fed animals in sleek condition.

Paths and Roads.—Icy paths and roads are dangerous to man and beast. After every fall of snow the roads should be broken down by a snow-plow or a stone-boat, and the paths shoveled out or packed down in a similar manner. A heavy plank drawn along the paths will clear off or pack down the snow. Coal ashes or sand are the best materials to scatter upon roads and paths when they become smooth and slippery. In the south, where mud prevails at this season, dry paths and drained yards will be a great addition to comfort.

Horses.—Work horses should be either sharp-shod or protected in some secure manner against slipping upon icy roads. Sharp calks are dangerous, and many horses are badly blemished by them. We have used the Goodenough shoe with a piece of rubber beneath it for this purpose. The rubber over-shoe is an excellent device. Either of these are effective preventives against balling or slipping. We do not advise the use of sharp calks when these can be procured.

Cows.—In-coming cows should be well cared for.

Some linseed-cake meal or bran in their feed will do no harm, but more exciting food should be avoided. A roomy stall or loose box should be provided in which the cow may remain at night without being tied. Milking cows will be benefitted by a pailful of milk-warm water with two quarts of bran or middlings stirred in it twice a day. Cold water for drink will greatly reduce the quantity of milk.

Young Stock will need close attention to keep them thriving and free from vermin. A mixture of lard and kerosene oil rubbed along the backbone from head to tail will free them from lice. Young animals need better protection from cold than full grown ones, which have thicker hides, and are better furnished with fat as protection from the cold.

Warbles.—The great majority of cattle are infested with grubs of the ox-bot fly. They are known as "warbles," and may be found hidden beneath the skin in lumps or swellings along the back on each side of the backbone. If these lumps are examined, a hole will be seen, and if the lump is squeezed from the bottom, a fat white grub may be forced out. These are the larvæ of the bot-fly which trouble cattle so much in the summer time. If the grubs were squeezed out of their nests at this season and destroyed, the pest would soon become extinct.

Sheep should have plenty of exercise and fresh air. Above all things they should not be allowed to lie upon warm manure piles, which they will do if permitted. A pailful of boiling water should be put into the trough to take the chill off from the water. This is especially useful for in-lamb ewes to which a chill from drinking ice cold water may be hurtful. In the southern states, where sheep are running in the fields or woods, shelter from the rains should be provided. Where they are yarded, they should be kept dry. Dry feet are never troubled with the foot-rot.

Swine.—Pork is high and hogs are scarce. This has been the case for two years. For want of care thousands of hogs have been lost in the western states by various fatal diseases. Where they are well cared for, there is no cholera or other diseases. In general, disease is simply the result of the most inexcusable neglect or bad treatment. When well cared for, no stock pays better or increases faster than swine, and no other pays better for care in breeding, and well selecting breeding animals. At present prices pork pays.

Fowls.—A few early laying hens that have been well fed will become broody about this time. It will not pay to allow them to "sit." The chicks cannot be raised with profit. Such hens should be given a few pills made of castile soap and sulphur, have no warm food for a few days, and be put into a shed where there is no place for them to make a nest. They will soon get over their incubative fever.

Ice.—If no ice-house has been made, some ice may be put up in a corner of a barn or a shed. But by all means some ice should be put up if it can be procured. A thick layer of sawdust should be placed beneath the ice, and plenty around it. Sawdust is the best packing, and is cheaper than any other in the end, although its first cost may be more. The ice chosen for cutting should be kept free from snow for some time before it is cut, that it may freeze thick and solid.

Seeds.—The stock of seeds for the coming season should be procured as soon as possible. If left until seed time is at hand, much delay may occur, as seedsmen are then crowded with orders. A good plan is to send to some respectable seedsman for a catalogue, and select some well known standard kinds for the main crops, both for the garden and the fields. If any new varieties are tried, a small quantity only should be used at first, until it is known that the soil and locality are favorable. Make a list of all seeds needed at once.

Tools and Implements.—This is the best season to repair and paint wagons, carts, and implements. Everything of the kind should be put in the best order for future use. More tools rust out for want of care, than wear out. What is saved by care, is the same as earned twice over, the thing is not only saved for use, but the price of another is saved too.

Drains.—Much may be done in cleaning out drains, and in some sections in making drains. When the spring rains arrive, or the ground is full of water, draining can not be done with advantage.

Wash-outs.—These are by far too common in the south, and greatly injure the value of farms where they occur, besides giving an unfavorable appearance to the country. They may be prevented by plowing the hill-sides deeper, and using a side-hill plow, making the furrows diagonally up and down the hill, instead of level back and forth, or around them. To fill them, throw in brush or stones, and plow the edges into the hollow, gradually widening the plowing, until there is a gradual hollow. Where they are feared, a number of plow-furrows should be made sloping gently down the hill, to carry off the water.

Fodder Crops.—Calculations for fodder crops should be made for the coming season. Where the winter is open, some plowing may be done for these crops. Fodder is never too plentiful, and in the southern states is the great need of the farmer. Oats and peas, or tares and barley, furnish heavy crops of green fodder, or dry hay if cut when in blossom. They may be sown as soon as the danger from frost is over. Four bushels of the mixed seed per acre is a proper quantity to sow. The richer the ground, the better for a fodder crop.

Yards should be kept well littered and dry; the feed troughs should be always turned over at night, so that if snow should fall they would not be filled with it; and water troughs should have loose covers for the same reason.

In the Southern States the month should be devoted to gathering and making manure, breaking up for the cotton-planting, and making contracts for labor. By and by the best hands will be engaged, and time may be lost in looking for others, or second-rate ones have to be taken. It is well, as far as possible, to keep the good hands year after year. Oats may be sown in this month, the red rust-proof being preferable. To secure against a sudden frost the seed should be covered three inches deep and rolled. Fences should also be thoroughly repaired, and every "hog-hole" closed solidly.

Work in the Horticultural Departments.

Orchard and Nursery.

The amount of out-door work that can be done in the orchard in the northern states is limited. Nurserymen, however, accomplish a great deal at this season. Preparations having been made,

Root-Grafting may be pushed rapidly. We have before given directions for doing this, but half an hour's watching of a set of expert grafters, will be better than a volume of description; there are many ways in which the labor may be divided, and little manipulations by which time is saved, which can only be learned in practice. Have but one variety of fruit in hand at a time, and use the greatest care in labeling. The grafted roots should be set in boxes with sand just moist enough to prevent drying, and not damp enough to induce mold. Keep in a cool place.

Cutting Back.—Nurserymen who send out well-shaped trees, head back the growth made the first year from the bud or graft, and induce limbs to start near the base; this work is done during the winter, and at the end of the next season fine stocky trees are produced.

Pruning may be done during mild spells, any time before the buds begin to swell. If large limbs are removed, cover the wounds with shellac varnish or common paint, after having first smoothed the cut carefully with a sharp knife or chisel.

Scraping the dead bark from the trunk and larger limbs is best done during a damp thawing spell, first giving the trunks a wash of whale-oil or soft soap, applied with a brush; this will give the bark a smooth, healthy appearance.

Broken Limbs.—If any branches of trees break under the heavy weight of ice or snow, the wound must be cut smooth, and painted or varnished. If a branch is only partly broken off, but still hangs, cut it away at once, for, should there be a high wind, more damage will be done.

Mice and Rabbits.—Tramp the snow firmly around the trunks of the trees, to keep away mice, and sprinkle blood or rub refuse meat upon them, to keep off rabbits.

Cions—Cut during mild weather, and store in sawdust or sand in the cellar, after labeling.

Preparing to Plant.—One who intends to set out an orchard should begin at once the preliminary work. The mere setting out of the trees is but a small part of the labor. The first things to settle are, how many trees to plant, of what varieties, and where they are to come from. We have often said—and shall probably say it many times more—no advice as to what to plant is so valuable as that of your neighbors. The fruit-list of the American Pomological Society, and that of your State Society are useful, but their information is too general. One looks at these lists, and finds that there are scores of apples and other fruits that are starred and double starred for his state, and he at most wants six or ten varieties, and perhaps fewer. In his despair he writes us to know what he shall plant. We can only give him the general information that these fruit-lists do. In such a case hitch up your horse, and make a journey around the neighborhood—no matter if it takes two or three days; the time will be well expended, for the information derived from those in a similar locality, will be vastly better than can be obtained in any other manner. Select only well known and tested varieties, and no matter how highly praised a new sort is—or how gaudy the picture of the fruit—let it severely alone, unless you care to take one tree only just to try.

Where to Buy? is the question very frequently asked, and which we generally decline to answer. Buy of a responsible man, wherever he may be; the nearer he is, the better, but be sure that the trees come from some established nursery. Other people think differently, but for ourselves, we would not take trees from an unknown party, if he would give them and set them out free of cost. Some people can afford to wait from 6 to 12 years to find out that, instead of the trees ordered, they have only a lot of rubbish; and the man of whom they bought them is nowhere to be found. To avoid all this loss of time and bitter disappointment, buy of established nurserymen only.

Send your Orders as soon as the list is determined upon. It is better to buy in the fall, but do not lose a year's growth. Order now, and order early, that you may be the better served.

Labels may be prepared and painted during cold, stormy days, when nothing can be done.

Fruit Garden.

Fruits and vegetables are often planted together, the small fruits, such as blackberries, raspberries, etc., are put along the fence-rows, and it is no wonder that in such spots the fruit is poor in quality and quantity. Where it is possible, the two gardens should be separate, as this allows better culture for both fruits and vegetables. There is nearly always some wall or building against the sheltered side of which may be planted one or more grape vines. The border should be dug out, and properly filled with good, fresh soil, and if any fertilizer is used, let it be broken bones. In two or three years a fine crop of fruit may be gathered. There is no excuse for a lack of fruit on any farm in the country; there are numerous places around every farm-house, where small fruits may be easily grown, if a little pains is taken. Villagers with small lots manage to have an abundance of fruit, but large farms are too often lacking in this.

Kitchen Garden.

The proper enjoyment of the fruits of last season's labors in the garden, will depend greatly upon the care given to storing the vegetables. Roots should not be allowed to dry and wilt, and they must not be kept so warm that vegetation will start. If kept in moderately dry earth or sand, they will now be nearly as fresh as when dug, as the earth prevents all shrivelling. The roots not

protected in this way should be covered with straw. During every day that is not freezing, the doors should be opened, to keep the temperature low.

Celery stored in trenches in the open ground, should be well covered with straw and boards during very severe weather; provide surface-drains to take away all water which may collect near the trenches. A week's supply may be taken out, and put into boxes, and stored in the cellar, where they can be readily got at.

Cold Frames.—Give air on every mild day, else there will be danger that the plants may commence to grow from too much heat.

Manure.—Prepare the manure that is to be used next spring by an occasional turning. Save all house-slops to pour upon the compost heap.

Pea-Brush.—Prepare a quantity for use next season, and store under cover, placing heavy weights upon the piles, to flatten them into proper shape.

Bean-Poles may be cut at any time when the snow is not too deep to get into the woods; red cedar makes the most durable poles.

Seeds which are to be ordered from a distance, should be sent for at once. If left until needed for use, the varieties needed may be exhausted. Clean and prepare all home-raised seeds, and label and store in a dry cool place away from mice.

Flower Garden and Lawn.

The work in this department at the north, is only one of preparation. New arrangements of flower-beds and borders may be planned better now than when the hurry of spring work comes. Rustic work can be made during the winter; cedar may be got from the swamps while they are frozen, and other woods, such as laurel and the like, may be cut, and these with a little ingenuity, may be made into tasteful trellises, seats, and other garden ornaments; for making hanging baskets, deep wooden bowls and rattans are needed. Secure all flower seeds at once, so that they will be ready as soon as needed for sowing in the hot-beds.

Greenhouse and Window Plants.

As the sun gets more powerful, the plants in the greenhouse and windows should be looking at their best. During cold nights a thin cloth or newspapers thrown over house plants, will protect them from being chilled.

Insects must be looked after, else they will soon over-run the plants. Fumigate at least once a week, to kill the green fly, selecting a time when the house is not too moist. To destroy the red spider, it is only necessary to sprinkle the plants thoroughly once or twice every week. Mealy bugs must be destroyed by hand picking.

Annuals.—Sow seeds of Candytuft, Sweet Alyssum, and Mignonette, etc., for cut flowers.

Forcing.—A few plants of Bleeding Heart, Deutzia gracilis, and Lily of the Valley, may be brought into heat now, when they will soon flower.

Bulbs of Hyacinths and Narcissuses, which were potted for winter blooming, may be brought into the greenhouse or sitting-room from time to time, if they have made roots abundantly.

Horticultural Notes for the Southern States.

In view of the large and increasing circulation of the *American Agriculturist* in the southern states, we have arranged with a gentleman, who, in practical knowledge and wide experience, is second to none, to furnish us with monthly notes, suited to the warmer parts of the country.

The majority of farmers leave almost all kinds of garden work to be attended to until after the holidays, and thus lose the most favorable opportunity to thoroughly prepare their land. After the cotton-picking is ended, there is usually a short time in December, when suitable weather prevails, and this period should be partially devoted to gardening operations. Unfortunately this favorable time is seldom used to the right purpose. With the advent of the new year, other matters of seemingly greater importance to the farmer, require his time and attention, and with making preparations for the active farm-work, the garden-work is hurriedly and imperfectly performed; seeds are put in a badly prepared soil, and the results are unsatisfactory. We presume, however, that all our progressive farmers have not neglected the garden-work, which should be performed during December, but if this is still undone, no time should be lost in giving it immediate attention.

The Orchard must have a shallow and careful plowing, so as not to destroy the roots of the trees. Top-dress the land with compost, ashes, plaster, etc. If trees are failing in vigor, give them a liberal top-dressing of fertilizers, and dig this under, taking a circle at least equal to the spread of the branches of the tree. Pruning may be performed, but where only a small number of trees are to be cared for, it is preferable to delay this operation until February. Prune grape-vines, and train to arbor or trellis, as needed by the different varieties.

Transplant Fruit Trees without delay, if not already done; there exists a general impression among our people that fruit trees can only be transplanted during November, and again in February, and that either December or January are unsuitable for this operation. Nothing is more erroneous; doubtless this idea originated from the perusal of horticultural works published in localities where the ice-bound soil renders the work impossible during these months. In all the southern states where the soil is seldom frozen, tree planting may be performed from the fall of the leaf, until new vegetation commences in March. But early fall-planting has numerous advantages over spring-planting. Although fruit trees do not make a growth of wood and leaves, they are continually increasing their root-growth, this never ceases here during the period of rest of the tree, hence, if one has transplanted his trees early in the winter, he will have secured considerable root-growth, and his trees will be firmly established when vegetation starts in spring.

Early Potatoes should be planted from the beginning to the 20th of this month in all light soils; but in strong clay soils planting should be delayed until February. Very little is gained by planting too early, especially in strong soils, where the danger of decaying in the ground is to be apprehended. Perhaps no better variety than Early Rose can be advised, it has been so eminently successful wherever it has been cultivated, that it should not be put aside for newer varieties, which are no doubt very meritorious, but need further trial, before risking them for a general crop.

Hardy Vegetables.—Sow peas, radishes, and lettuce from 1st to 15th of this month; carrots, beets, parsnips, salsify, etc., after the 15th. Continue to sow spinach, radishes, etc., at intervals, for succeeding spring crops.

Hot-Beds and Cold Frames.—Prepare these, and sow early cabbages; we find Large Early York and Early Winningstadt still unsurpassed for the earliest. For second early sow Early Wyman, Early Savoy, etc.

FLOWER GARDEN.—Prepare seed-beds by digging and manuring thoroughly.

Prune Roses, and see that the old wood is removed and replaced by last year's growth. Plants must not be allowed to become crowded with the old wood; a few stout young shoots of last year's growth, cut back to six or eight inches of the ground, will produce better flowers, than can possibly be expected if the plants are left unpruned, and burdened with a mass of branches.

Deciduous Shrubs, which continue to flower during the summer and fall, must be pruned. Those flowering in spring only, should have been pruned last summer, after they passed out of bloom. If these are pruned now, they will flower sparingly, as their bearing wood is formed during the previous year.

Camellias will bloom profusely during this month in the open ground, and it is desirable to protect the buds from heavy cold weather. This can be done by placing a frame over the plants, and covering it with a cloth during very inclement weather.

Greenhouses should be kept well ventilated, especially if Camellias are grown under glass; failing in this, the loss of the flower-buds may be the result.

Soft-wooded Plants, for bedding out in spring, must now be propagated; transplant Verbenas, and other hardy perennials, if they have been grown in pots, but always harden off seedlings before exposing them in the open ground.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Dec. 13th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	389,000	3,115,000	1,904,000	42,000	207,000	796,000
26 d's *last* m'th	491,000	4,873,500	2,014,000	151,000	412,000	1,379,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	401,000	3,769,000	1,886,000	74,000	502,000	1,812,000
26 d's *last* m'th	473,000	5,104,000	2,912,000	69,000	431,000	2,107,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875..	389,000	3,115,000	1,904,000	42,000	207,000	796,000
25 days 1874..	367,000	2,376,000	1,404,000	129,000	307,000	1,312,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875..	401,000	3,769,000	1,886,000	74,000	502,000	1,812,000
25 days 1874..	360,000	3,001,000	2,315,000	92,000	289,000	1,209,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Dec. 7, 1875..	5,878,036	816,962	99,908	305,961	1,252,005	258,364
Nov. 8, 1875..	3,219,457	1,112,998	79,355	277,400	813,591	249,986
Oct. 11, 1875..	2,382,502	1,682,246	10,910	21,688	439,698	261,428
May 11, 1875..	969,804	1,542,924	16,124	16,537	545,209	229,655
Jan. 11, 1875..	3,675,122	1,049,900	50,889	191,470	877,014	145,647
Nov. 9, 1874..	3,680,141	1,727,510	19,123	117,185	794,722	135,882

4. *Exports from New York, Jan. 1 to Dec. 9.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1875	1,789,299	25,054,035	12,495,349	159,952	1,505	132,754	415,019
1874	2,055,423	33,700,159	18,329,781	641,661	3,320	110,334	422,653

5. *Receipts at head of tide-water at Albany each season to Dec. 1.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
1875	113,600	21,335,200	8,581,800	250,900	3,833,600	3,105,300
1874	165,200	23,791,500	17,723,200	337,600	3,428,400	3,581,500
1873	153,500	22,761,700	18,552,200	950,200	2,153,300	3,385,900
1872	137,300	11,349,100	29,928,700	474,600	4,548,600	5,696,000
1871	290,700	21,313,400	20,042,300	1,107,900	3,839,400	6,639,400
1870	430,400	17,124,700	4,805,100	587,500	3,984,700	6,167,500

CURRENT WHOLESALE PRICES.

	Nov. 12. 1874 3-8	Dec. 13. 1874 3-8
PRICE OF GOLD		
FLOUR—Super to Extra State	$4 90 @ 6 25	$4 40 @ 5 85
Super to Extra Southern	4 90 @ 8 75	4 40 @ 8 50
Extra Western	5 35 @ 8 50	4 85 @ 8 50
Extra Genesee	6 00 @ 7 25	5 85 @ 7 00
Superfine Western	4 90 @ 5 30	4 40 @ 4 75
RYE FLOUR	4 00 @ 5 50	4 10 @ 5 35
CORN-MEAL	3 25 @ 4 00	3 15 @ 4 00
BUCKWHEAT FLOUR, ℔ 100 ℔s	2 40 @ 2 75	2 15 @ 2 65
WHEAT—All kinds of White	1 30 @ 1 50	1 30 @ 1 50
All kinds of Red and Amber	95 @ 1 45	95 @ 1 40
CORN—Yellow	76 @ 77	68 @ 75
Mixed	73 @ 76	62 @ 75
White	75 @ 82	67 @ 76
OATS—Western	42 @ 53	43 @ 53
State	44 @ 53	45 @ 53
RYE	85 @ 92	85 @ 95
BARLEY	80 @ 1 25	85 @ 1 35
BUCKWHEAT, ℔ bush	68 @ 72	65 @ 67
HAY—Bale, ℔ 100 ℔s	65 @ 1 10	70 @ 1 15
STRAW, ℔ 100 ℔s	50 @ 95	55 @ 1 00
COTTON—Middlings, ℔ ℔	13¾@ 13¾	13 @ 13¼
HOPS—Crop of 1875, ℔ ℔	12 @ 17	10 @ 15
FEATHERS—Live Geese, ℔ ℔	35 @ 60	35 @ 55
SEED—Clover, ℔ ℔	10½@ 11	12½@ 13
Timothy, ℔ bushel	2 25 @ 2 65	2 30 @ 2 80
Flax, ℔ bushel	1 55 @ 1 65	1 65 @ 1 70
SUGAR—Refi'g & Grocery ℔ ℔	6¾@ 9¼	6¾@ 9¼
MOLASSES, Cuba, ℔ gal	28 @ 38	28 @ 38
New Orleans, new crop, ℔ gal	70 @ 80	54 @ 64
COFFEE—Rio (Gold)	17¾@ 20¼	18 @ 20½
TOBACCO, Kentucky, &c., ℔ ℔	8 @ 25	6 @ 25
Seed Leaf, ℔ ℔	6 @ 25	6 @ 25
WOOL—Domestic Fleece, ℔ ℔	28 @ 60	28 @ 62
Domestic, pulled, ℔ ℔	27 @ 50	27 @ 50
California, clip	14 @ 33	14 @ 33
TALLOW, ℔ ℔	9¼@ 9⅝	9¾@ 10
OIL-CAKE—℔ ton	40 00 @44 50	42 50 @46 50
PORK—Mess, ℔ barrel	22 50 @ —	21 75 @ —
Prime Mess, ℔ barrel	19 00 @19 50	19 50 @22 00
BEEF—Plain mess	11 00 @12 00	10 50 @11 50
LARD, in tres. & barrels, ℔ ℔	12¼@ 13⅜	12½@ 13
BUTTER—State, ℔ ℔	24 @ 34	24 @ 36
Western, ℔ ℔	16 @ 34	14 @ 34
CHEESE	4 @ 13½	4 @ 13¼
BEANS—℔ bushel	1 50 @ 2 30	1 30 @ 2 25
PEAS—Canada, free, ℔ bu	1 15 @ 1 18	1 18 @ 1 22
EGGS—Fresh, ℔ dozen	27 @ 32	28 @ 32
POULTRY—Fowls	9 @ 18	9 @ 18
Turkeys—℔ ℔	11 @ 18	10 @ 18
Geese, ℔ pair	1 12 @ 1 87½	1 25 @ 2 00
Geese, ℔ ℔	9 @ 15	8 @ 13
Ducks, ℔ pair	50 @ 75	55 @ 80
Ducks, ℔ ℔	14 @ 19	8 @ 16
WOODCOCK, per pair	50 @ 60	— @ —
CHICKENS, ℔ ℔	13 @ 20	13 @ 18
GROUSE, ℔ pair	95 @ 1 12	80 @ 1 25
PARTRIDGE, ℔ pair	50 @ 1 12	50 @ 1 00
DUCKS, Wild, ℔ pair	35 @ 1 50	30 @ 1 25
QUAIL, trapped, ℔ dozen	2 50 @ 3 50	1 40 @ 2 50
HARES, ℔ pair	60 @ 75	60 @ 75
RABBITS, ℔ pair	35 @ 50	40 @ 50
VENSION, ℔ ℔	13 @ 17	11½@ 18
TURNIPS ℔ bbl	75 @ 1 00	50 @ 75
CABBAGES—℔ 100	2 50 @ 5 50	2 00 @ 5 00
ONIONS—℔ bbl	1 00 @ 2 50	1 00 @ 2 50
POTATOES—℔ bbl	75 @ 2 25	65 @ 1 75
SWEET POTATOES—℔ bbl	1 25 @ 2 25	1 25 @ 2 25
BROOM-CORN	6 @ 11	— @ —
PEARS, per box	3 50 @ 4 00	3 50 @ 4 00
PEARS, ℔ bbl	3 00 @14 00	— @ —
GRAPES, ℔ ℔	5 @ 9	3 @ 7
APPLES—℔ barrel	2 00 @ 3 50	1 75 @ 3 00
CRANBERRIES—℔ bbl	7 50 @10 50	7 50 @ 9 75
QUINCES, ℔ bbl	4 50 @ 9 00	— @ —
SQUASH, ℔ bbl	30 @ 60	— @ —
CAULIFLOWER, per bbl	1 50 @ 3 50	2 00 @ 6 00

Gold has been up to 117, and down to 113¾, closing

Dec. 13th at 114⅜, as against 114⅜ on Nov. 12th..... With the practical close of navigation for the season, produce movements have generally been on a restricted scale. The stronger range of ocean freights has also worked against the export business. The fluctuations in gold have also been against active dealings....Breadstuffs have been in less request for shipment, as well as for home use, and prices have been quoted lower and irregular. Toward the close, Flour, Wheat, and Corn were quoted weak. Rye, Barley, Peas, and prime Oats firm. The Barley market has been exceptionally brisk and buoyant. Malsters have been very free purchasers, and prices have advanced. The new Grain grading system at this port went into partial operation at the beginning of this month....Provisions have been quite active, and at the close held with confidence, in most instances....Cotton has been quoted lower, leading to more liberal transactions, in good part on export account ....Wool has been moderately sought after, and has been quoted firm. Desirable grades of Domestic have been offered with reserve....Hops have been in less demand, and at the close quoted cheaper. Export dealings have been recently quite limited....Hay and Straw have been in good request at advanced rates....Grass Seed has been very scarce, and held above the views of buyers, checking operations. Prime Clover has been wanted for export....Tobacco has been in fair demand at previous quotations.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	22.00@ 24.00
Ground Feed, per ton	22.00@ 24.00
Linseed-oil-cake, western, per ton	45.00@ 46.00
Cotton-seed-cake, per ton	25.00@ 25.50
Chandler's Scraps, per lb	——@ ——

Prices of Fertilizers.

Superphosphate of Lime, per ton	$25.00@$26.50
" Ammoniated, per ton	——@ 35.00
Pure Ground Bone, per ton	34.00@ 36.00
Bone Meal, per ton	40.00@ 45.00
Raw Bones Unground, per ton	25.00
Bone Black, per ton	30.00
Pure Raw Bone Phosphate, per ton	38.00
Dried Blood, (11@12 per cent ammonia), per ton	40.00@ 45.00
Fish Guano, per ton	20.00@ 25.00
South Carolina Phosphate, (fine ground), per ton	21.00
Niter Cake, (ground), per ton	25.00
Gypsum, Nova Scotia, ground, per ton	9.50
" In barrels, per bbl	1.25
Sulphate of Ammonia, per lb	4¾c.@5 c.
Chloride of Potassium, (muriate of potash), lb	3 c.
Nitrate of Potash, crude, per lb	8½c.
Nitrate of Soda, per lb	3½c.
Sulphate of Potash, per lb	1½c.
Sulphate Soda, ground, per ton	$25.00
German Potash Salts, (30@35 per cent), per ton	25.00
Peruvian Guano, per ton	60.00
Leached Wood-ashes, Can. and N. Y., per bush	17 c.@19 c.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.	Tot'l.
Nov. 22	9,012	86	1,648	25,542	37,707	73,995
Nov. 29	7,320	84	845	22,731	27,108	58,088
Dec. 6	8,910	79	995	22,668	33,034	65,686
Dec. 13	9,963	123	970	23,900	31,620	66,576
Total for 4 Weeks	35,205	372	4,458	94,841	129,469	264,345
do. *for prev.* 5 *Weeks*	49,051	523	11,238	154,351	158,915	374,078

	Beeves.	Cows.	Calves.	Sheep.	Swine.
Average per Week	8,801	93	1,114	23,710	32,367
do. do. *last Month*	9,810	104	2,247	30,870	31,783
do. do. *prev's Month*	10,273	94	2,808	31,212	23,588

Beeves.—The market has ruled somewhat irregular during the past month. The competition of cheap poultry, which has sold for about the price of beef, has kept prices from advancing, and at times has even depressed the market in spite of smaller receipts. The higher average which appears in our quotations, is due not to any real advance, but to a better quality of cattle offered, the receipts of Texans being light at the close of our report. The heavy receipts, 1,000 head over the last week but one, caused a dull market with a downward tendency of prices, sales being made only at a concession on the estimates of weights. Extra beeves of 60 lbs., but estimated at 59 lbs. per gross cwt., sold for 12½c. Natives estimated at 57 lbs., sold for 12½c. per lb., and 9c.@10c. on estimates of 55 to 56 lbs. per cwt. Texans sold at 7c. per lb. on estimates of 54 to 55 lbs. the cwt.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Nov. 22	7½@13½c.	10 @11 c.	10½c.
Nov. 29	7 @13½c.	9½@11½c.	10½c.
Dec. 6	7½@13 c.	10 @11½c.	10⅜c.
Dec. 13	7 @13½c.	10½@12 c.	10⅜c.

Cows.—The demand for good cows has been fair and steady, poor ones have been left unsold. The sales were at $55@$80 each. There is no call for poor cows.... **Calves.**—The market for calves has been easy, and prices tend downwards. The best bring only 10c. per lb. live weight. Milk calves, fair to good, closed at 8c.@9c., and grass calves at $8@$13 per head....**Sheep and Lambs.**—This stock has held its own fairly, and prices are fixed in accordance with quality. Poor to good sheep are selling at 5c.@6c. per lb. live weight; prime to extra bring 6½c.@7c., and good lambs, 7½c.@8c. As an instance of the loss occasioned by careless management, we cite the case of a lot of fair 80 lb. sheep, which should have brought 5¾c. per lb., but being so burry as to be difficult to handle, they brought only 3¾c., a loss of $1.60 per head. These burrs will doubtless stick in the owner's memory a long time ...**Swine.**—The market is very firm. The stock of hogs in the country has been overestimated, and many are being bought by western farmers to consume the corn crop, in localities where large numbers were shipped last year. The market closes firm at 9c.@9¼c. per lb. for dressed western, and 9¾c.@10¼c. for State and Jersey.

Remember
The Valuable Premiums.

See Page 33, and send to the Publishers for an Illustrated List of Premiums if you have not already received it.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

The Paper and Its Cover.—Heretofore the *American Agriculturist* has been simply folded and stitched, and only a portion of the pages could be opened until the leaves had been cut. This year we send it out with the edges neatly trimmed, and it may be opened at any page. There are advantages in both plans, and to judge from the requests that have come to us, we have no doubt that the one now adopted, of cutting, will please a large number of our readers.—A word about the cover, which is not, as is most generally the case, the same for every month, and often for every year, but there is practically *a new cover every month,* as the large central picture, and the smaller ones in the corners, are *new each month;* they are upon timely subjects, and are designed and engraved with as much care as the illustrations upon the inside pages.

The N. Y. Horticultural Association.—There was once a Horticultural Society in New York City, and a quarter of a century ago it manifested considerable activity. It gradually grew weaker, and at last fell into the hands of those who talked it—if not to death—into so profound a sleep, that it has not moved for several years. It was probably to get around the fact that such a society is somewhere in a state of suspended animation, that the recently formed society took the name above given. A horticultural organization is so much needed in New York, that we may welcome it under whatever name it comes, and we are glad to know that some 70 names are already on the list, as members of a society for the promotion of horticulture. The officers are: President, John Henderson, of Flushing, L. I.; Vice-Presidents, George Such, of South Amboy, W. C. Wilson, of Astoria, James Paterson, of Newark, N. J., and Robert Parsons, of Flushing, L. I.; Recording Secretary, J. Davidson, of Brooklyn; Corresponding Secretary, Peter Henderson, of Jersey City; Treasurer, Isaac H. Young, of New York. These names indicate that there will be no lack of executive ability. Now let the patrons of horticulture do their share, and see that the Association is abundantly endowed.

A Convention of Short-horn Breeders met at Toronto, Canada, on the 1st of December. Breeders from nearly all the northern states and Texas were present. J. H. Pickerell, Esq., of Illinois, who occupied the chair, referred to the fact that more Short-horns had changed hands during the past year than in any previous one. He objected to too much consideration being given to "family breeding," and advocated the cultivation of the beef producing qualities of the stock in preference to mere pedigree. The Secretary, S. F. Lockridge, of Indiana, then read a communication on the subject of Coöperation, from the president to the Duke of Devonshire, president of the Short horn Association of Great Britain and Ireland, and his reply, and that of the Association through their secretary, promising interchange of publications and courtesies. The Treasurer, Claude Matthews, of Indiana, then read his report, showing a balance in the treasury of $187. On motion of Dr. A. C. Stevenson, of Indiana, a committee was appointed to revise the constitution. Much discussion took place upon the merits or demerits of close breeding, without any decided result. The Convention finally adjourned to meet at St. Louis, in Dec., 1876.

"Camp Life in Florida" is the title of a compilation by Chas. Hallock, of numerous papers on Florida, which have appeared in that excellent journal, "Forest and Stream," and issued by the publishers of that paper. It is full of the information needed by the sportsman or tourist who wishes to see something of Florida aside from the route of regular travel; it describes attractive portions of the state but seldom visited, and gives much information not to be found elsewhere. Its directions for camp and boat outfit, shooting and fishing "traps," guides, and other matters, are judicious, and with due regard to economy. A large share of the book is by our correspondent and friend, Al Fresco, and we are sure he knows all about such things.

Rifle-Shooting Notes.—The illustrated article last month seems to have met a popular want, and to have awakened not a little interest. Some tell us that though they had used a rifle almost a lifetime, for game, etc., they had never looked into the principles involved until they saw that article. We did not thus intend to open a "shooting department," but will cheerfully respond to any appropriate queries that we can. The following will answer several inquiries: 1st. The Remington and Sharp rifles of 44-100 vary a little in diameter, which is unfortunate, as the Sharp gun will not take the Remington bullet....2d. In using the "Bead" or globe sight, we think it preferable to sight over the top of it, depressing it to the lower edge of the hull's eye, or other object, and adjust the rear sight accordingly. This avoids uncertainty and dimness of vision often occurring when the bead just covers the object. For short range, or any off-hand shooting, the bead is preferable, but for long range, or shooting at rest, we prefer the "open bead" here shown, with a diameter of $^1/_{12}$ inch, which covers some 7 feet at 1,000 yards, but it is easy to bring the object in a line with the center of this opening. We tried a smaller opening, ($^1/_{16}$), but found it too small for cloudy days, and near sundown. Col. Wingate gives engravings of 21 different forms for the front sight, of which 15 are allowed at Creedmoor....3rd. As to powder, we have not sufficient experience to decide the relative value of different manufactures. We have tried samples of the *same* brand procured at different places, and found one to require 1 to 3 points more elevation than another, at 1,000 yards. Finding "Hazard's F. G. Kentucky Rifle powder" working well, we procured 5 pounds out of one lot, the most one can keep

OPEN BEAD.

without vitiating insurance, so as to have uniformity. A lad weighs every charge on delicate scales, turning with less than a tenth of a grain. This gives regularity, leaving only the wind and light to be calculated for at a regular distance. It is said that a variation of 1 grain weight (not kernel), will make a difference of 8 or 10 inches in elevation in 1,000 yards. Poured from a flask partly or wholly filled, giving it an equal number of shakings at each pouring, with the mouth downward, we have been able to *measure* many successive charges not varying more than $^1/_6$ grain in weight....4th. A strong light often raises the apparent place of an object above its real place, so that in full sunlight one must aim one or two points lower, and raise again if clouds come up, or the sun goes down. By points, we mean minutes of a degree marked on the vernier, each 1' corresponding to 2 inches for each 100 yards, as 20 inches at 1,000 yards, etc....5th. The Remington lock needs no spring to draw back the firing needle, or pin. It falls back of itself on opening the breech block....6th. Any one can endure the recoil of 90 to 100 grains of powder, and 550 grains of lead, quite easily if the gun be held *firmly* against the shoulder (not the arm), so that it gets no momentum. Bathing the shoulder in alcohol night and morning will soon remove bruises and toughen the muscles. We have known a shoulder thoroughly sore, all "black and blue," soon cured by the alcohol, and care in bringing back the gun firmly, without stopping the daily shooting. A shotgun heel-plate on the stock is far preferable to any fancy hollowing out or curving. The points left by the latter are always in the way in changing position. The worst recoil injury we ever saw was from one of these fancy points.

The New York State Dairymen's Association.—The Annual Meeting of the N. Y. State Dairymen's Association was held at Norwich, N. Y., on the 9th of December. X. A. Willard, president of the Association, opened the meeting by an address in which he referred to the great improvements which have been made in the process of dairying since 1848, and the considerable improvements that still need to be made. In this respect he instanced cleanliness as the one thing yet needful. He urged dairymen to raise their own cows; and by care in breeding to raise the production from 400 to 600 lbs. of cheese yearly per cow. He advocated the use of condensed milk in cities as a means of preventing the frauds and abuses in the city milk trade. Dr. Crafts advocated soiling, and thought that better care and feeding would increase the yield of cows at least 33 per cent. A. L. Fish thought soiling unprofitable except in time of drouth, or when food is scarce. Gen. E. F. Jones considered soiling as destructive to cattle. He advocated half soiling and pasturing. E. W. Stewart had soiled cattle for twelve years. The extra labor was only $75 for 45 head of cattle in a year. He described his new barn, octagonal in shape, with no interior timbers, and with concrete walls. Prof. Roberts showed that it cost in excess of food at least $32.72 yearly to heat the food and water of a cow in her stomach, while it could be heated by steam or coal for $7. He fed his cow 25 lbs. of hay, 7 lbs. of meal, and 2¼ lbs. of bran daily. This high feeding, and the estimate of the cost of warming the feed in the cow's stomach, were considerably discussed. After some other remarks of no particular interest, the meeting was adjourned.

Give Name and Address in full!—Correspondents should understand that we wish to have the names and full addresses always, not for publication, as we publish no names or initials if requested not to do so, but that we may know from whom and from where the enquiry comes. For want of this knowledge it is sometimes impossible to give the information required, and sometimes we would rather reply by mail. Always give name and town, county, and state.

Catalogues.—Just as we go to press, the current of spring catalogues of dealers in Agricultural and Horticultural materials of all kinds, begins to flow in. We are obliged to omit a notice of those already received, until next month, and we hope that all our friends who intend to send us catalogues, will do so at the earliest possible day.

The American Agriculturist in New Zealand.—At the fair of the "Northern Agricultural and Pastoral Association," held at Oamaru, New Zealand, last fall, one of the citizens offered as a special premium for the best loaf of *home-made* bread the bound volume of the *American Agriculturist* for 1875. We do not know who was the winner of the prize, though the volume has been ordered and is on its way.

A Heavy Essex Pig.—"R. S. W.," Watsonville, Mich., sends a statement of the weights of an Essex pig, the carcass of which, after slaughtering, weighed 574 lbs., and after dressing, it weighed 540 lbs., losing only 34 lbs., or less than 6 per cent in offal.

FREE—FREE—For the "Hard Times."—No doubt many a Reader, in looking over the Engravings and Descriptions, (given in our Premium List, and referred to on page 33 of this paper), has felt a strong desire to have several of the good things there named. Well, we say in all candor, it is easy for almost any one to obtain one or more of them, *free of charge.* **First,** is there any doubt that each one of your neighbors would get hints, suggestions, and positive information enough out of a whole volume of this Journal, to abundantly repay him for the small subscription price, ($1.60 for a year, postage included)? **Second.**—Can not you easily tell him, and show him, and convince him of this? **Third.**—You have only to do this in a few or many instances, as the case may be, and in return for this, which will cost you no money, the Publishers will be happy to *present* you with one or more of the premiums, corresponding to the number of names sent. **Fourth.**—Over **16,000** persons have thus done, and are not you equally expert with most of the other 16,000? **Fifth.**—Every family you get to *reading* and *thinking* more, you directly benefit. The more there are of such persons in a neighborhood, the more intelligent and elevated will the whole society be. Thus, in extending the circulation of this journal, and receiving the premium article, you are literally working "*To do good and make money.*"—Try it now. State that you are working for a Premium, when you send in subscriptions. You will then have a premium credit for all names sent in between now and July 4th, 1876—and can take the premium whenever you desire it.

The English Wheat Crop.—The prospects of the fall sown wheat, in England, are very unfavorable. Much seed has rotted in the ground, in consequence of the cold, wet weather, and the sowing is very backward. The latest reports mention an improvement in the weather, but very dubious feelings as regards the next harvest. The markets are nevertheless lower, in consequence of heavy receipts but the Mark Lane Express says those who look for a continuence of low prices, are undoubtedly too sanguine.

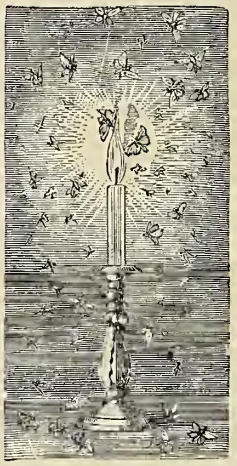
The Little Washer.—Among the various contrivances for facilitating the labor of washing, are those in which a continuous stream of boiling suds is thrown upon the clothes, to percolate through them, and again be forced upon them; the boiling liquid continually circulating in this manner, cleanses the fabrics. The best thing of this kind we have tried, is the "Little Washer," made by Bissell & Co., Naugatuck, Ct., best not only in throwing a more copious stream, but because it can be used in any ordinary wash-boiler. Sufficient directions accompany the washer. With this, as with every washing machine we have yet seen, the much soiled parts need special attention.

The Western New York Horticultural Society will hold its 21st annual session in Rochester, commencing January 5th; all who feel an interest in the objects of the society, are invited to attend and participate in the proceedings. Contributions of fruits, especially new and rare varieties of value, and other objects of horticultural interest are solicited. The subject of making a state exhibition of fruit and horticultural objects at the Centennial Exposition, will come up for discussion. Several essays and addresses will be given on practical subjects. The annual fee, $1, entitles the member to the Transactions. P. Barry is President, and P. C. Reynolds, Secretary and Treasurer.

The New Jersey Horticultural Society.—The first annual meeting of this society will be held at New Brunswick, N. J., in Geological Hall, on the forenoon of the 20th instant. A number of papers upon different horticultural subjects are promised, and these, with the discussions which will follow them, indicate an interesting meeting. All engaged in any department of horticulture, whether commercially or as amateurs, are invited to be present, and to become members of the society.

The First Annual Exhibition of the Long Island Poultry Association was held at Brooklyn, N. Y., Nov. 30th to Dec. 3rd. The display of birds was excellent, and although not large, was more select and of higher general character than any we have previously seen. The Light Brahmas were a remarkably fine lot. In this class the $100 premium for the best cockerel was awarded to Philander Williams, of Taunton, Mass. McKeen and Hulick, of Easton, taking the second place. Smith & Brother, of Stony Brook, L. I., took the $50 premium for the best collection of poultry. The following first premiums were awarded: for Light Brahmas, J. K. Felch, Natick, Mass.; Dark Brahmas, D. C. Waterhouse, New Haven, Ct.; Partridge Cochins, Black Cochins, and La Fleche, P. Williams, Taunton, Mass.; Fancy Pigeons, J. Van Winkle, Greenville, N. J.; Brown Leghorns, Mrs. Johnson, Newtown, L. I.; Game Fowls, M. Goldie, Princeton, N. J.; White Cochins, J. J. Berry, Hackensack, N. J.; Grey Dorkings, H. Hales, Ridgewood, N. J.; G. P. Hamburgs, Crevecœurs, and Rouen and Aylesbury Ducks, Smith Bros., Stony Brook, L. I.; S. P. Hamburgs, G. White, Ridgewood, N. J.; Houdans, H. N. Grant, Tarrytown, N. Y.; G. S. Bantams, W. H. Pullis, Bay Shore, L. I.; S. S. Bantams, H. S. Magrane, Newark, N. J.; Muscovy Ducks, W. M. Tuttle, Speonk, L. I.; Pekin Ducks, E. H. Lawrence, Bay Side, L. I.; Bremen Geese and Bronze Turkeys, J. M. Rockwell.

Sundry Humbugs.



In the early days of the *American Agriculturist*, its pages contained only here and there an exposure of some especially glaring fraud; it was a novelty in journalism, and was associated with another novelty, the refusal to publish at any price advertisements not only of a fraudulent character, but those which were in other respects objectionable. The exposures of humbugs soon grew to such importance that they have been continued as a regular department of the paper, while the rule in regard to advertisements has been rigidly maintained. As this issue goes to a great number of new readers, a word of explanation will be timely. The sole object of these exposures is to warn the community, and especially the agricultural portion of it, against the various fraudulent schemes devised for getting their money without giving an adequate return; it would take too long to specify the various phases in which fraud appears, for it has more heads than the fabled Hydra, and comes under more disguises than Proteus. But whatever scheme that has unfair designs upon the pockets, the morals, or the health of the community, finds here an uncompromising opponent. When sure that a scheme is injurious to the public welfare, we do not hesitate to expose it, no matter if its object is claimed to be a benevolent one, and is on that account supported by the names of those in high positions. On the other hand, we are careful to hold up no one in these columns unless we have satisfactory evidence that he is entitled to a place here. It often happens that one who has had an unsatisfactory transaction with another writes to request us to show up the one with whom he had dealings, as a humbug; these columns can be used for no retaliation for private grievances; they are for the protection of the community against those who seek to prey upon it. That our exposures have been of vast benefit, and that the amounts we have saved the public may be counted by millions rather than by thousands, our correspondence gives ample assurance, and the letters of congratulation and encouragement we receive from all over the wide country, more than compensate for the annoyances to which our course subjects us. While the majority of sensible persons need only to be shown the fraudulent character of a scheme to make them avoid it, there is a large class we do not hope to benefit—those who want to be humbugged—the class of which Butler wrote two hundred years ago:

"Doubtless the pleasure is as great,
Of being cheated, as to cheat."

These exist everywhere, and no sooner recover from one singeing than they, moth like, are ready to fly at the flame again—a well known human weakness that has furnished our artist a subject for a head piece.

WALL STREET BOGUS BROKERS.

For a long time the *American Agriculturist* was the only journal that noticed the manner in which persons calling themselves brokers, were flooding the country with circulars, showing how easily large sums might be made by investing small amounts in stock gambling. Of late the New York daily papers have noticed the matter, and the vigilant Mr. Gaylor, Superintendent of the New York Post-Office, has notified the Stock Exchange that the "Saw-dust Swindlers" whose business is well nigh broken up by excluding them from the mails, have turned "put" and "call" brokers. The matter has now become so serious that it is thought that legislative

action will be asked to put a stop to this form of swindling....About the "cheekiest" thing in this line that we have heard of is the sending by one of these "brokers" of a telegraphic despatch to a gentleman in Kansas, who had before received circulars, but never had any dealings with the chaps, saying, "If you desire to invest we now have an opportunity on certain stock we believe sure to advance. Market active." For this precious bit of information the Kansas man had to pay $1.65, telegraph charges; he thinks "this is robbery," and we agree with him. He "feels like having his money back," a point on which we can give him no encouragement.

SERIOUS COMPLAINTS COME FROM CANADA.

in regard to the produce dealers in Chicago. It is stated that one Canadian lost a million, another $200,000, and another $130,000, and so on. Now it strikes us that a person able to accumulate either of these sums, should be able to hold his own against any Chicago or other "produce gambler," and we have no doubt that it would turn out that these very persons were taking a part in a heavy game, and lost. Had they made, we should have had no complaints of the Chicago produce dealers. The method of doing business in the Chicago produce market is not a matter that we can hope to change, nor can we upon assertions unsupported by evidence set down "the principal dealers in grain and produce as a set of gamblers."—Farmers in Canada, as elsewhere, should exercise caution in their dealings, and recollect that it is better to mourn over their produce than to mourn after it....Advertisements worded "the same with intent to deceive," are common; the wonder is that any one can be taken in by them. Not long ago a time-keeper in a gold case was offered for one dollar. Many were foolish enough to think that this was a proposal to send some kind of watch, and sent their dollars to receive only the cheapest kind of a sun-dial in a gilt paper case. A similar dodge in relation to

A SEVEN-SHOOTER

was practised by an enterprising youth near Cleveland, O. He sent out circulars far and wide setting forth "Allan's New Low-Priced Seven-Shooter," which was a "triumph of mechanical genius." It was "warranted to be as good after three years' use as when first purchased." On account of "improved facilities for making them rapidly and cheaply," the price was reduced to $1.50, or $13 a dozen. Orders came in freely, and when the purchaser received anything, it was a small bronze pea-shooter, into which, if seven small shot were dropped, they could be discharged in succession, by pulling the trigger. As the youth had been using the mails for a swindling operation, the case was put in the hands of a U. S. Marshal, who arrested him at a small farm-house with a rickety wood-shed for the "arsenal," and took him to the lock-up in Cleveland, where, at last accounts, he remained. He claimed that he sent all that he advertised, and if people expected a revolver at that price, it was not his fault. One can hardly conceive of any one foolish enough to expect any kind of a serviceable seven-shooter, revolving or not, at such a ridiculous price. Yet it is said that the orders poured in for them by "legions."

THE BUTTER COMPOUND

has now turned up in Connecticut. Ohio was not long ago the headquarters of the stuff, but its star, unlike that of Empire, wends its way eastward. If people would take a common-sense view of such things, they would not write to ask our opinion. The circular claims that butter undistinguishable from the true article can be made at a cost never exceeding four cents per pound. Now, if there were any truth in this claim, do you suppose that the makers of the compound would send out elaborate circulars entreating people to buy the compound, a box of which will make 100 lbs. of butter, at 50 cents wholesale? Not much. They would make the butter themselves. On 100 lbs. of butter costing 4 cents per pound, they would make from $20 to $25 at fair market rates, while by selling the compound, if it were *all* profit, they make only 50 cents. That tub won't hold water.

WORTHLESS AND PERNICIOUS BOOKS.

The number of concerns engaged in various parts of the country, in selling books that pretend to teach wonderful secrets, or which are really pernicious, is something wonderful. The catalogues show that the different shops have pretty much the same stock, though the names of some books may be changed. One of these books proposes to tell "how to make gold and silver from block tin. Also how to take impressions from coins."—A nice bait for would-be counterfeiters. "Mysteries of Love Making," and "How to Woo and How to Win" are titles of trash of which there are numerous other kinds. For the sum of 50 cents one can buy "How to Get Rich," the catalogue of the contents of which is most amusing reading. A long list of such works is offered, which, if not positively immoral, are useless, and in so far as they induce young people to believe that there is any other way of getting along in the world than by working, are injurious. These shops usually have an extra catalogue offering treatises on "Sexual Physiology," "Marriage Guides," and other works which parents would not willingly allow their children to read, and which are anything but useful to older people.

MEDICAL MATTERS,

as usual, form the bulk of our budget. Buffalo has long been a favorite locality for quacks. It has a Medical College, and a Medical and Surgical Journal. Yet, under the very noses of these, some of the most mischievous and unblushing characters, send out their circulars broadcast over the country. We some time ago exposed the trick of one of these fellows, one Abbey, who advertised all over the country, especially in "family" papers, a Prize Picture, the "Toll Gate," to be sent for a stamp. This picture is a card, upon one side of which is a rather poor puzzle picture, but on the other side—and that is the whole object of the thing—is the advertisement of a book couched in such language as to excite the fears and arouse the curiosity of young people of both sexes. Almost every possible thing that can happen, is set down as a symptom of a "secret cause,"..."which leads directly to the grave," and the whole story can be learned from the book, which is then of course the stepping stone to the fellow's medicines. The "Buffalo Sunday News," recently published Abbey's portrait as the "Prince of Buffalo Quacks," and gave him and his book a fearful scoring, though in a manner more forceful than elegant. * * * At last the "Buffalo Medical and Surgical Journal" goes for a quack, one Dr. Marshall, who has left the city and is flourishing in Kansas, as having been a Professor in The Medical College. Now why does not the Medical Journal show up another Buffalo quack, who is still more conspicuous than either of these, and is able to buy up some journals by the page? It is hardly fair that all this should be left to us....Here is a remarkable document,

"THE BIG BONANZA,

what it is and what it isn't." And after reading a long rigmarole, we find that it is that unfortunate agent, electricity, which is the "magic healer,"—but it must be applied by the advertiser. We read of electricity "Antagonism is its basis. This arises from its acid and alkaline constituents."—"Constituents" of electricity is good—we shall next be taught about the compound constitution of heat.

GOT STUCK.

The publishers of a Maine paper send us a circular denouncing two quack medicine makers, as they have broken their advertising contracts, and warn "the public against buying the medicines they advertise." They ask us to pass the swindlers along. This is none of our funeral we do not see that those who make promises to pay money, which they can not fulfill, are any worse than those who promise cures which they can not perform. But then it makes a difference as to whose ox is gored. We are at a loss to understand the logic which makes the medicines these chaps advertise any less good or bad, because the makers thereof did not pay their bills. This whole quack medicine business is one of the best things in the world for publishers, and others, to let severely alone. *We* do not lose any money by them, or receive any from them. None of them are rich enough to buy a line of advertising in this paper, cash down, let alone promises or contracts.

NOT IN OUR LINE.

A little the strangest advice that has been asked of us, is sought in a recent letter in which was something in a paper. The writer asks what kind of medicine it is; "it was sent to a lady to make her have a miscarriage; she took it, as directed; it made her very sick, but did not produce the desired effect. It was bought from Dr. —— in Philadelphia, two table-spoonfuls costs $2.50. He is selling a good deal of this medicine."—You quite mistake our calling, anxious man, if you suppose that we shall be accessory to *murder* in any form, by examining the stuff, or giving any advice about it. If the Philadelphia chap sent something to make "her very sick," it serves her right, but if he is in the trade of selling what you supposed the stuff to be, we can find a very quick way of clapping a stopper upon his criminal course. You probably think this looks rather rough in print. "Criminal" and "murder" are not pleasant words, but they are the only ones which describe the crime from which you have fortunately been saved.

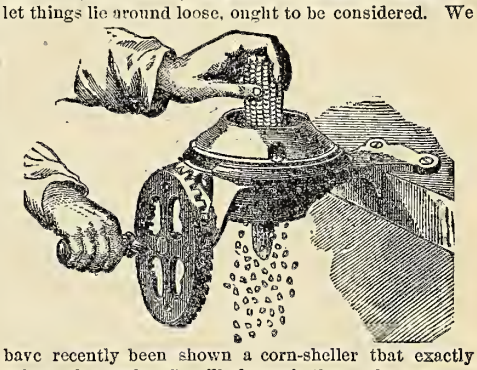
Concrete Houses.—"H.," McLean Co., Ill. In the *American Agriculturist* for December, 1874, we gave full descriptions with illustrations of a method of building concrete houses. Where stone cannot be procured, and only coarse sand is at hand, the latter may be used equally well, but the cost will be greater. In this case seven parts of sand may be used with one of cement. Before a house is built it would be well to experiment a little by procuring a barrel of the cement and mixing some of it with varying proportions of sand, say four, five, seven, or nine parts of sand to one of cement. The quality of the sand makes some difference. The dry mixture of cement and sand being wet with sufficient water to make a soft semi-liquid mortar, should be molded in a rough box and left to set. After it is dry, each sample should be broken with a hammer, and that which is hardest or the best, should be taken as the basis for the construction of the house. These houses are very warm and dry.

GOOD THINGS.—FREE.—Read about them on page 33, and if you have not a copy, send for our large Illustrated 8-page Descriptive List, supplied free to any one wishing it.

Feeding Coarse Hay, Marsh Hay, Salt Hay, Etc.—Important Article.—Prof. Atwater's article on the above topics, on page 10, is worthy of careful reading by every one at all interested in feeding stock. The non-scientific reader may have to study pretty closely, and read over the previous chapter, in last volume, but it will be worth all the effort required to fully understand the subject. Scientific investigations, fully confirmed by practical experiments, show beyond reasonable doubt, that a great saving, and corresponding profit, may be realized by a judicious mixture of feeding materials—just as the supplying of a few deficient elements to a soil, in the form of a little barnyard manure, or other fertilizer, will greatly increase the production of valuable crops. Read and understand the present and subsequent articles. Every farmer and stock-raiser, who has not had them, should get and read the chapters in the volume for 1875.

American Dairymen's Association.—The annual convention of the American Dairymen's Association, is to meet at Rome, N. Y., on the 11th to 13th of this month. It is announced that this is to be an important meeting, and a large attendance is hoped for. Arrangements for a representation of the dairy interests at the Centennial Exhibition are to be provided for.

A Cheap Corn-Sheller.—The ordinary corn-sheller is nearly always in the way. It is a top-heavy concern, worse to run over than a wheelbarrow, and when it is run over and upset, the handle or some other part is broken, and the whole machine is useless. In making a machine, the habits of careless farmers who let things lie around loose, ought to be considered. We



have recently been shown a corn-sheller that exactly suits such people. It will also suit those who are careful, but who have not much room for storing tools away, and it is exactly the thing for those who have but a small quantity of corn to shell. The illustration sufficiently describes it. It is made wholly of iron, and is durable. It is screwed on to a bench or a stool, and one may sit down to operate it. When out of use it may be hung up or placed on a shelf. It is called the "Home Corn-Sheller," is made by Livingston & Co., at Pittsburgh, Pa., and its low price will make it worth having, even to those who have a large sheller, but who sometimes want to shell a small quantity of corn.

Poland-China Swine.—"S. O. F.," Grey's Mills, Pa. The Poland-China hogs are said to have originated in Butler Co., Ohio, with a breeder named Magie, from a cross between Poland and China swine. Hence they are called Butler County hogs, by some, by others, Magie hogs, and by the majority, Poland-China, which is now the accepted designation. They have been largely crossed with the Berkshire, and in the majority of cases have been much improved thereby. They are a favorite class of hogs in the west, and doubtless, if carefully bred by a skillful breeder, might be brought to a fixed and valuable type. As they now are, they are variable in character, although when well fed they make a large, handsome hog.

Basket Items continued on page 33.

Bee Notes for January.

BY L. C. ROOT, MOHAWK, N. Y.

Of hives and frames there is an endless variety. I could not, if I would, touch upon the advantages or disadvantages of all. There are a few practical points that are essential, and if the hive you are using possesses them, don't change. The question of importance to beginners is, between the hanging and standing frame.

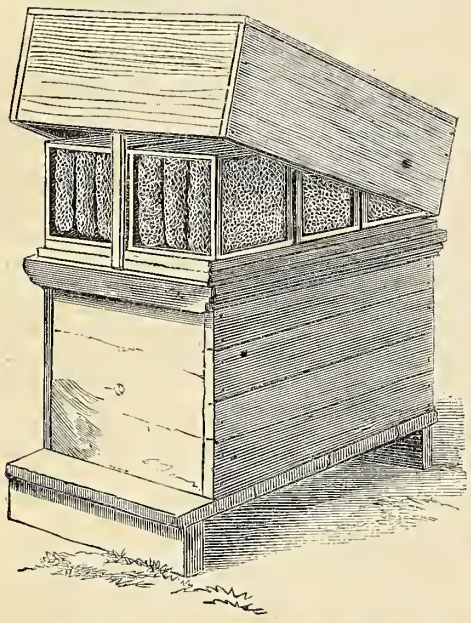


Fig. 1.—HIVE WITH SUSPENDED FRAMES.

Each has its advantages. After studying the subject with much interest, I fail to find any hive and frame that meets as many requirements as does the Quinby hive. For boxing or extracting honey, for adapting space of the brood-chamber to the size of stock, or for placing in winter quarters, I find no hive its superior. A hive large enough to hold a sufficient number of frames for extracting, or boxes for the honey that should be gathered by a strong swarm in a good season, must necessarily be too large to be placed in winter quarters. Hives with hanging frames must be placed bodily in the cellar, which is not only laborious, but they occupy too much space. The Quinby hive can be left on the summer stand, while the frames are packed away as described in November last. Figure 1 represents a hive with hanging frames, with boxes in place on top. This hive is a modification of the Langstroth, and is 12 in. wide, 12 in. high, and 20 inches long, inside measure. The frames hang on rabbeting at the top. The Quinby hive is shown at figure 2, with top, front, and one side removed, showing the management of the boxes. One top and one side box are displaced, to show the means of access from the frames. The box showing holes in the bottom, belongs on top of the frames, where a thin honey board has holes to match those of all the top boxes. The other box has a strip of glass in the end, with ½ inch space at each side; this end is placed to the side of the frames. The hive is 19 in. deep, 27 in. wide, and 18 in. high. This gives room for 16 frames, when used for extracting, or boxes to contain 150 lbs. of comb. A frame to be practical, and adapted to the wants of the bees, must be made strong, and with no cross pieces. I am asked if a cross piece through the center, either horizontal or perpendicular, will not assist in securing straight combs. I answer no, and if it would, there are disadvantages in other directions. When such a piece crosses the frame either way, the queen does not readily cross it, but confines the brood to one side, and it is thus a decided hindrance to breeding. Others use a frame with but one strip across, and that about half way from the bottom. Quite recently a frame has been advocated with no bottom strip. This may have its advantages, but it is not a practicable frame to handle. For ease and convenience, it is often necessary to rest the weight of the frame and its contents on the corner. One will readily see that such a frame as shown in fig. 3, would not hold its form, and a tender comb must necessarily be broken. It would not even be safe to stand such a comb on the end by the side of the hive, an almost absolute necessity many times.

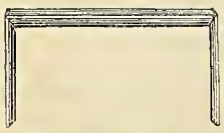


Fig. 3.—FRAME.

Fig. 4.—FRAME.

The material used for frames is often too light, frequently only $^3/_{16}$ or ¼ inch thick. The frame represented in fig. 4, is of the Quinby style, and is made of strips ½ inch thick, and well braced at the corners. Some of the best beekeepers not only make their frames strong in this way, but for further security they bore holes through the frames, and fasten the combs by pinning them in with thorns from the red haw. Hives do at times get turned over, or a frame may accidently be dropped, and if the frames are made strong, and the combs are well secured, there will be little danger of their being broken. As to the proper size and shape of frames, beekeepers will ever differ. Both extremes have their advocates. Those as shallow as 6 or 7 inches, are recommended by some, while others would have them 14 inches deep. The length will vary according to the depth. For warm climates, the shallow frames may be preferable, but for a northern latitude I would not recommend them. In this, as in all things, I advise avoiding extremes. A frame will nearest meet all requirements that is about 12 inches deep. The Quinby frame is 11½ by 19½ inches. Those who desire a smaller frame, should take from the length rather than the depth.

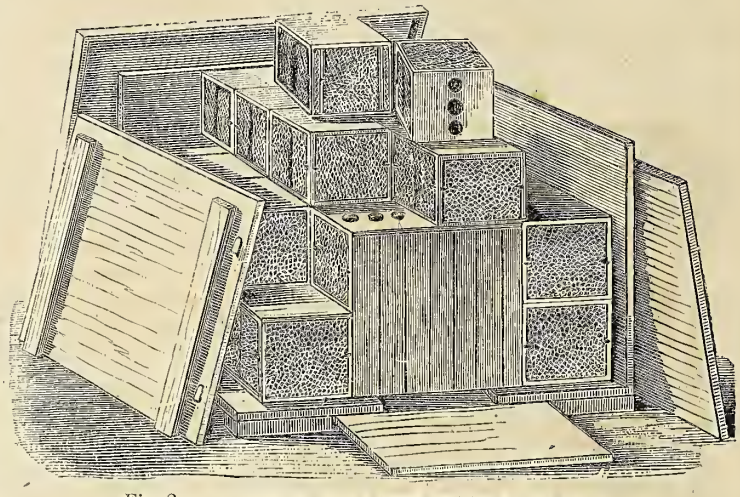


Fig. 2.—THE QUINBY HIVE WITH STANDING FRAMES.

Nearly all writers advise thoroughly painting hives. So far as the good of the hive is concerned, and for looks, we can all agree as to the advantage, but considering the best possible results to be reached, I find objections. I am satisfied that well painted hives retain moisture that would otherwise, and should pass off through the pores of the wood. It has long been acknowledged that straw made the very best wall for hives, and unpainted wood more nearly resembles the porous nature of straw. A hive that is set up and fastened together with hooks or clasps, is less open to this objection than one firmly nailed together.

Each hive should be furnished with a good, substantial roof, thoroughly painted, and projecting at least two inches over the top of the hive, (fig. 5). It is all important that each hive, in all its parts, be exactly like every other hive in the apiary, as at times it becomes necessary to change frames, and what is taken from one hive should readily fit another.

A Colt with a Bad Habit.—"A. C. W.," Weymouth, Mass. The habit of running out of the shafts when the horse is being unharnessed, is taught by carelessness. The first attempt should have been corrected. When the habit has become confirmed, much patience and care will be required to break it entirely. A good plan would be to secure the reins to the buggy or wagon before you leave the seat, in such a manner that the horse can not go ahead. Then, as soon as you have dismounted from the wagon, unhook the traces, and secure the ends by passing them through the breeching, or tieing each trace in a loop. Then very slowly loosen the hold-backs and breeching from the vehicle, talking to the horse meanwhile, to restrain him from moving. He will now be loose, and the lines may be unfastened and slowly gathered up, while still talking to the horse. When this has been done slowly and deliberately, and every movement having been instantly checked up to this time, the horse should be taken by the bridle and led out of the shafts. If the shafts do not come out of the loops easily, ease them until they do. In a short time the horse will understand his business. The fault is not his, but his driver's, who permits him to go before he is ready.

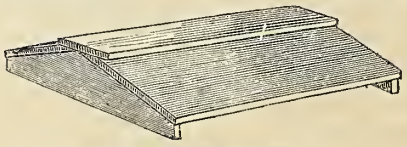


Fig. 5.—ROOF TO HIVE.

A Fine Crop of Fine Potatoes.

Mr. J. H. Burnett, of Onondaga Co., N. Y., last spring bought one pound of Snow-flake potatoes, of B. K. Bliss & Sons; they were cut into eyes, planted in good garden soil, without extra manure, and with the same cultivation as other potatoes. When he came to dig them, he was so much surprised at the result that the earth was carefully removed and the potatoes left just as they grew. The crop was kept on exhibition in this manner for a day, and was visited by a large number of farmers and others, and a photograph was taken, from which the engraving was made. One end of the row was partly shaded by a grape vine, and the yield less, but according to Mr. B., the potatoes elsewhere were remarkably even, and in such a solid mass that there was no room for a jack-knife between them. The crop weighed 60 lbs. 9 ozs.

MR. BURNETT'S CROP OF SNOW-FLAKES.

A Farm House Costing $3,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan will be recognized as comprehending the general characteristics of those given in the *American Agriculturist* for Oct. and Nov., 1875. It is designed to be constructed of similar materials, with a like variety of pleasing and decided outlines,

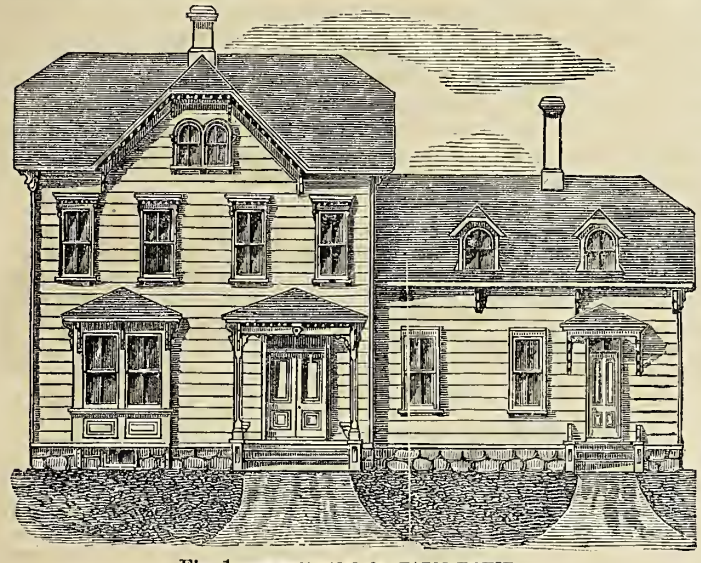


Fig. 1.—ELEVATION OF FARM HOUSE.

and to give an equal amount of accommodation and convenience. The division and arrangement of the several parts, however, are entirely changed, being especially intended to meet the requirements of a location having a *western* frontage. Location is an important consideration, involving many questions of adaptation, that should always guide to the selection of such a plan as will express a natural fitness for the situation, and truthfully indicate its purpose....**Exterior,** fig. 1. Only two feet of the foundation walls are exposed to sight, which brings the frame work of the building quite near enough to the ground. The surface of the earth surrounding such buildings, should have a grade of *at least* ½ inch to the foot, for the distance of 50 feet in every direction, to insure the turning away of all surface water from the walks and grounds. Another good result derived from such grade, is the additional altitude given to the building, imparting a much better appearance. The general outlines of the elevation are very simple, devoid of all pretentious ornamentation. The wide frontage, the large and numerous openings, and ample roofs, are each expressive of frankness and hospitality, eminently befitting the home of the farmer. The front Porch is unusually wide, and arranged to have large columns, and stationary seats at either side. The Bay Window has square projections, instead of octagonal, which are equally appropriate in this case, and less costly. The Cornices of the principal building project 20 inches,

Fig. 2.—PLAN OF CELLAR.

and those of the wing 16 inches, and both are provided with scroll sawed trusses. The chimney tops are large and heavily capped. The same general finish, as is shown on the front, is put on the sides and rear, so that the building presents an equally complete and satisfactory appearance from every direction. Buildings of this character should be set back from the street line at least 50 feet—150 feet would be much better—to give room for trees, shrubbery, and walks....**Cellar,** (fig. 2). The plans provide for a cellar under the principal building only, which gives a clear space of 22×25 feet. If desired, the space beneath the wing may be included at an additional cost of $65. The excavations for the cellar in the earth, is 3 feet 8 inches deep, this allows the foundation walls to be 7 feet high. The earth thrown out is to be graded around the building to the hight of 1½ foot, thus leaving two feet of the foundation exposed on the outside. Country houses are frequently set so low down, as to be a matter of regret ever afterwards. There are constant accumulations of dust, and other matter, caught and held by the shrubbery and grasses, so that there is soon discovered a seeming growth of the earth upward around the house, and immediate grounds, making it impossible to adapt the grades that are desirable. It is far better that foundations are a little too high than too low, for when too high, the approaches can easily be raised at any time, with a few loads of earth; but when too low, there seems to be no cure, except to raise the entire building.—The Foundation walls are designed to be constructed of broken stone, laid in coarse mortar, as more particularly described on page 372, Oct. *American Agriculturist*....**First Story,** (fig. 3). Hight of ceilings 10 feet. Entire floor measurement 1,206 square feet, affording ample space for good sized apartments. The several divisions have especial regard to comfort and convenience. The Front Hall, or reception room, is nearly square, of good dimensions, is entered from the front porch through double or fold-

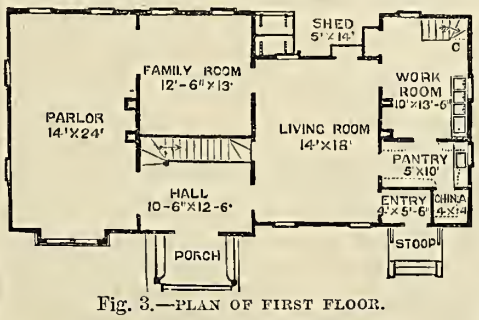


Fig. 3.—PLAN OF FIRST FLOOR.

ing doors, and adjoins the parlor, and living-room, and contains the principal stairs. The Parlor is unusually large, is provided with windows in its sides, and has stucco cornices and centers in its ceilings, with an arched finish in the bay window.—The Living or Dining-room is commodious, pleasantly situated, with outlooks front and rear, and is easily accessible all around. The Family-room is large, connects with the dining-room and parlor, and is intended as a sitting or sewing-room. If occasion require, this room might be used as the bed-room of an invalid.—The Work-room, or Kitchen, is conveniently arranged to have a range, boiler, pump, sink, wash-tubs, and pipes for cold and hot water, and adjoins the dining-room, a large pantry, and a rear entrance door, and has a private stairway leading to the second story, with a closet underneath. The Pantry is of ample dimensions, is conveniently arranged with shelving, and has a zinc wash-tray, with cold and hot water-pipes, and adjoins the kitchen, dining-room, and a china closet. The latter is useful for storing wares not required daily.—The rear shed is paved, and the cellar doors are constructed as described on page 373, October *American Agriculturist*....**Second Story,** (fig. 4). Hight of ceiling 9 feet in main building, and 8 feet in wing. Floor measurment 1,276 feet, divided into 8 good sized rooms, besides halls, closets, and stairways. The principal hall connects with each chamber in main building, and one room and passage in wing. The door between principal hall and wing-passage, may be closed at any time, cutting off communication at pleasure. The side or "breast" walls in the wing, are vertical 3 feet, and are continued upward at an angle of 45° to the ceiling, thus securing sufficient head-room. The bath-room is exactly above the kitchen, and contains a tank, bath-tub, and seat-closet, with pipes for cold and hot water....**Attic.**—The stairs to this are over the first flight, and are designed to be neatly ceiled in with 4½ inch beaded ceiling boards, with a door at the foot. Double windows in each gable, admit sufficient light, and afford ventilation....**Remarks on Construction.**—An insight into the character of this plan, is best had by carefully considering the materials and cost in the estimate below. We would urge the importance of good methods and workmanship in construction, without which all materials, however good or sufficient, can never produce good results. The old maxim, "whatever is worth doing at all, is worth doing well," especially applies to building a home in which one is to spend a lifetime. This does not imply extravagance in any sense, only demanding such *careful and intelligent application of the ordinary rules of construction*, as shall insure substantial work, that will not be a continuous source of anxiety and expense. Any one of ordinary intelligence, should be able to generally superintend the operations of the mechanics employed in constructing a farm-house. The following *points* are of the greatest importance. Carefully watch that the foundation walls are substantially laid; and accurately leveled on their upper surfaces, so that the doors shall not strike the floor or carpets in opening, nor the tables, chairs, or other furniture be obliged to stand on three legs. The frame-work when raised should be plumb, so that all work on or in the building can be cut square, and applied without tedious fitting. The siding should be thoroughly "seasoned" in the open air before using, and carefully applied with close joints, and well nailed. The edges of all water-tables, corner boards, and window frames should be painted *before* setting. The shingles should be carefully laid, breaking their joints at ⅓ of their width, and double nailed. The flooring should be dry, close laid, and nailed with two nails to each beam. The partitions should be set with studding of selected widths; and their angles or corners should be anchored firmly together, to prevent the walls from cracking in those parts when finished. The chimneys should be carefully constructed; all joints between the brick-work should be surely filled with mortar, to prevent sparks from passing through to the frame-work. All mortar for plastering should be properly mixed, and allowed sufficient time, (at least one week), for the thorough slacking of the lime, and a complete permeation of its caustic properties. Thin coats of plastering are better than heavy ones. A mortar that does not crack in setting or drying, is sure to be good. The interior wood finish should not be commenced until the plastering is completely dried out, and all loose mortar is removed from the building. All wood work usually painted

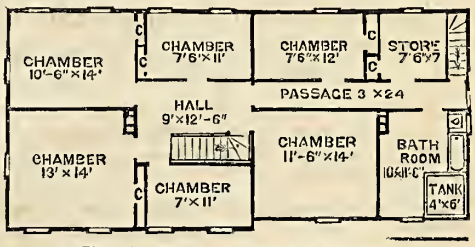


Fig. 4.—PLAN OF SECOND FLOOR.

should be primed as soon as in position. For more explicit remarks and sundry suggestions on painting, see page 212, June *American Agriculturist*, 1875.

Estimate of Materials and Cost:

110 yards Excavation, @ 25c. per yard	$ 27.50
1371 feet Stone Foundation, @ 15c. per foot	205.65
3,000 Brick, (furnished and laid), @ $15 ⅌ 1000	45.00
46 feet Stone Steps, Sills, and Coping, @ 30 c. per ft.	13.80
1,030 yards Plastering, complete, @ 35c. per yard	360.50
5713 feet Timber, @ 2c. per foot	114.26
viz. 1 Sill, 4x8 in. x 186 ft. long. 2 Girts, 4x8 in. x 25 ft. long. 6 Posts 4x7 in. x 21 ft. long. 57 Beams, 3x8 in. x15 ft. l'g. 3 Posts 4x7 in. x 14 ft. long. 36 Beams, 3x8, in. x13 ft. l'g.	

1 Tie, 4x6 in. x 256 long. 24 Beams, 3x8 in. x 11 ft. l'g.	
1 Plate, 4x6 in. x 186 ft. l'g. 4 Valleys, 3x8 in. x 20 ft. l'g.	
24 Rafters, 3x5 in. x 16 ft. l'g.	
100 Joist, 3x4 inches x 13 feet long, @ 16c. each	$ 16.00
300 Wall Strips, 2x4x13, @ 13c. each	39.00
Materials in Water table and Cornices	50.00
300 Novelty Siding Boards, 9½ in. @ 28c. each	84.00
4 0 Shingling lath, @ 6c. each	24.00
69 bunches Shingles, @ $2 ℔ bunch	138.00
81 feet Gutters, 132 ft. Leaders, and Porch Roofs, 10c. per foot	35.10
355 Flooring, 9½ x 13 @ 28c. each	99.40
Porch and Hood complete	75.00
Stairs complete, $90; Bay Window, complete, $60	150.00
20 Windows, complete, @ $10 each	200.00
6 Cellar Windows, complete, @ $6 each	36.00
4 Dormer Windows, complete, @ $20 each	80.00
32 Doors, complete, @ $10 each	320.00
1 Cellar door and Hatchway doors	20.00
Shelving and hooks in closets	20.00
2 Marble Mantels and 4 Shelves with trusses	75.00
Range and Plumbing, complete	215.00
Nails, $25; Bells, and Speaking Tubes, $20	45.00
Painting, $200; Cartage (1 mile) $35	235.00
Carpenter's labor not included above	250.00
Incidentals	26.79
Total cost, complete	$3,000.00

Experiments with Winter Wheats and other Grains.—Fertilizers.

We have before us a circular in which are set forth the results of a series of experiments made by David Landreth & Son, the well known seed growers and dealers. These experiments were made as it would seem, to test the virtues of what is known as Prof. Ville's complete manure, consisting of superphosphate of lime, muriate of potash, sulphate of ammonia, and sulphate of lime, mingled in certain proportions, as well as the hardiness and productiveness of several varieties of wheat. The first series of experiments was made with the Clawson wheat, sown upon 21 plots of $^1/_{16}$ of an acre each, at the rate of half-a-bushel to the acre. These experiments were a failure, the fertilizers showing very little effect. What results were obtained are not given, any further than this meager statement. A second series is given in which, while there are abundant and full accounts of the appearance of the plants, there is no information as to the quantity of the crop, excepting that the average yield of 27 plots, sown at the rate of 2½ lbs. of seed per acre, of different varieties upon each plot, was at the rate of nearly 38 bushels per acre. The Clawson wheat was the best, and yielded at the rate of 42 bushels per acre. The seed was sown in drills 16 inches apart. Some experiments with spring wheat, as might have been expected in that latitude, totally failed. With barley of several varieties sown, one known as "Oregon," produced 48 bushels per acre, while no others produced more than 33 bushels. Of oats several varieties were sown, at the rate of 44 lbs. to 64 lbs. per acre. The Probstcier oats yielded 71 bushels per acre; Holbeck's pedigree oats, 63 bushels, and a winter variety, known as Virginia winter oats, produced 649 bushels upon 11 acres. These experiments would have been of much more practical value, had more detailed information been given as to the yield and character of the grain, the character and condition of the soil, the date of sowing and harvesting, and less of the color and appearance of the foliage, which is quite immaterial in a practical point of view.

Science Applied to Farming.—XIII.

By Prof. W. O. Atwater, Wesleyan University, *Middletown, Conn.*

More about Coarse Bog and Salt Marsh Hays—How Science and Experience Agree as to their Proper Use.

We are quite fortunate at our Laboratory, in having frequent and very interesting visits from the intelligent and enterprising farmers of this section. One of them, Mr. W., who, though Secretary of an active farmers' club, modestly forbids the use of his full name, was in recently, and reported his experience in using marsh hay and cotton-seed meal for his stock. He and his father before him have for years cut a good deal of coarse hay from low, marshy land too wet to plow. They formerly wintered their young cattle on this hay, but Mr. W. has concluded that it is not profitable. A steer would go into the stable in the fall weighing 800 lbs., and come out in the spring 25 or 30 lbs. lighter. Indeed, his cattle generally did poorly on such fodder. Dissatisfied with this, he has tried mixing cotton-seed meal with the marsh hay, and with most satisfactory results. His cattle like the mixture, thrive well on it, look sleek, their hair lies down smooth, and they come out in the spring in excellent condition. He feeds his cows 2 quarts per day each, of cotton-seed meal, and all the hay they will eat. They give as much milk as they would from the best upland hay, and the milk yields as much, and, in Mr. W.'s opinion, better butter.

That Mr. W.'s plan works so excellently, is to be expected, because it is rational and scientifically sound. The addition simply makes his coarse lowland hay as good as he can grow on his best uplands, at a small cost. And many other farmers do, and thousands more might do the same thing.

What Ingredients do Cattle Need in their Food—What do the Poor Hays Lack, and how Shall they be Supplied.

As the result of years of careful experimenting in the agricultural Stations, and of the best farming experience, calculations have been made of the amounts of food ingredients which will ordinarily be needed and economically used by various animals, as oxen, cows, horses, sheep, according as they are kept at work, or to yield milk, or to be fattened. For instance, it is believed that a fair daily ration for a milch cow would contain for each 1,000 lbs. live weight, about 15½ lbs. of digestible organic substance, consisting of not far from 2½ lbs. albuminoids, 12½ lbs. carbo-hydrates, and about ½ lb. fat. This accords, indeed, quite perfectly with our common experience. We all know that young succulent grass and the finer quality of upland hay, are excellent for producing milk; while from medium or poorer hay alone, the best yield cannot be obtained. Now let us study the composition of these foods in the table below:

Table 21.

KINDS OF FODDER. 100 Pounds Contain	Water.	Mineral Matters.	Organic Substance.	Of Organic Substance is digestible	The digestible organic substance consists of: Albuminoids.	Carbo-hydrates	Fats.
COARSE FOODS.							
a.—Marsh Hays. *Salt Hay.*	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Better quality mixed	8.2	7.1	84.7	45.9	3.4	41.6	0.9
Black Grass	8.7	5.2	86.1	47.6	3.9	43.8	0.8
Rush Salt Grass	8.6	6.7	84.6	47.6	2.1	45.0	0.6
Coarse Salt Marsh Grass	15.9	10.4	73.7	39.7	2.2	36.7	0.8
Fresh "Meadow" Hay.							
Bog Hay, cut in June	7.4	6 3	86.3	45.6	4.4	40.5	0.7
Bog Hay, cut in August	8.2	5.5	86.3	47.4	3.1	43.5	0.8
b.—Upland Hays, Straws.							
Best Upland Hay	16.0	7.7	76.3	54.5	9.2	43.1	1.2
Superior Upland Hay	15.5	7.3	77.2	52.0	8.3	42.6	1.1
Medium quality Hay	14.3	6.2	79.5	47.4	5.4	41.1	0.9
Poor quality Hay	14.3	5.0	80.7	38.8	3.4	34.9	0.5
Oat Straw	14.3	4.0	81.7	39.9	1.3	37.4	0.6
Winter Wheat Straw	14.3	4.6	81.1	33.1	0.8	31.9	0.4
Young Grass, (green)	77.5	2.1	20.4	14.0	2.2	11.5	0.4
CONCENTRATED FOODS.							
Wheat	14.	1.7	83.9	76.	11.7	63.1	1.2
Indian Corn	14.4	1.5	84.1	71.0	8.4	57.8	4.8
Peas	14.3	2.4	84.3	73.6	22.0	49.9	1.7
Field Beans	14.3	3.1	82.4	68.0	23.0	43.6	1.4
Potatoes	75.0	0.9	24.1	23.0	2.1	20.6	.3
Turnips	92.0	0.7	7.3	6.5	1.1	5.3	.1
Brewers' Grains	76.6	1.2	22.2	13.8	3.9	9.5	0.4
Malt Sprouts	8.0	6.8	85.2	58.1	18.4	38.0	1.7
Wheat Bran	13.1	5.4	81.5	51.9	10.9	37.6	3.4
Linseed Cake	11.5	7.9	80.6	60.7	23.8	29.0	8.9
Cotton-seed Cake (decort'd)	10.1	7.7	82.2	55.7	28.8	17.0	9.9
Western Middlings	12.7	2.1	85.2	71.7	8.4	61.3	2.0
Western Shipstuff	11.8	2.3	85.9	67.8	8.7	57.1	2.0

(See December Paper for explanation of above figures.)

From the above table the following is deduced by simple calculations:

Table 22.

Fodder for Milch Cows, 1,000 lbs. live weight. Rations below contain	Organic Substance in a digestible form.	The digestible Organic Substance consists of: Albuminoids.	Carbo-hydrates.	Fats.
	lbs.	lbs.	lbs.	lbs.
Calculated Ration	15.5	2.5	12.5	.4
110 lbs. Young Grass	15.4	2 4	12.6	.4
30 lbs. Superior Upland Hay	15.6	2.5	12.8	.3
30 lbs. Medium Quality Hay	14.2	1.6	12.3	.3
30 lbs. Early Cut Bog Hay	13.7	1.3	12.2	.2
30 lbs. Better Salt Hay	13.8	1.0	12.5	.3
30 lbs. Coarse Salt Grass Hay	12.	.8	11.0	.2
40 lbs. Coarse Salt Grass Hay	16.	1.1	14.6	.1
35 lbs. Early Cut Bog Hay	15.9	1.5	14.2	.2

These figures indicate very plainly the essential difference between the young grass or superior hay which will, and the poorer hay which will not, keep stock in good condition, and enable cows to give a full yield of milk. The 110 lbs. of young succulent grass, or 30 lbs. of superior hay, supply as much of digestible material as a whole, and as much of each of the ingredients as the animal needs. 30 lbs. of any one of the poorer hays supplies only a little less, while 35 lbs. early cut bog hay, or 40 lbs. coarse salt hay, if the cows could digest so much, would furnish more material than they need.

What then do the Poorer Hays Lack?

It is evidently not the carbo-hydrates. They furnish nearly as much of these as even the young grass does. They are deficient in the fats, and especially in the albuminoids. Notice how these decrease in the above table as we go from the better down to the poorer hays. Our figures then accord with Mr. W.'s experience in saying that

To Make Coarse Marsh Hays Equivalent to the Best Upland Hay,

we must add materials rich in digestible albuminoids and fats. For this purpose Mr. W. uses cotton-seed meal. Suppose now that his cows weigh 1,000 lbs. each, and each one eats 30 lbs. of hay and 4 lbs. of cotton-seed meal per day. They will consume digestible substance as follows:

	Organic substance.	Albuminoids.	Carbo-hydrates.	Fats.
In 30 lbs. bog hay	13.7	1.3	12.2	2
In 4 lbs. cotton-seed meal	2.3	1.2	.7	4
In whole daily ration	16.0	2.5	12.9	6
In 30 lbs. sup. upland hay	15.6	2.5	12.8	3

So our chemistry says the coarse hays with the cotton-seed meal ought to be, and experience testifies that they are, equal to the best hay. Suppose we were dealing with the better quality of salt-marsh hay, and wished to use it for wintering young stock, oxen not working, or dry cows, for which medium or poor hay would suffice. We have:

	Organic substance.	Albuminoids.	Carbo-hydrates.	Fats.
In 30 lbs. better salt hay	13.8	1.0	12.5	3
In 2 lbs. cotton-seed meal	1.1	.6	.3	1
In whole ration	14.9	1.6	12.8	4
In 30 lbs. medium hay	14.1	1.6	12.3	3

Here 2 lbs. of cotton-seed meal, added to 30 lbs. of better quality salt hay, makes it equal to 30 lbs. medium upland hay. At this rate 133 lbs. of cotton-seed meal would suffice for a ton of salt-marsh hay. And about 267 lbs. would be needed for a ton of early-cut bog hay. Cotton-seed meal costs about here from $1.80 to $2.20 per 100 lbs. At $2 per cwt., the 267 lbs. needed to make a ton of good bog hay equal in composition to a ton of the best upland hay, would cost $5.33, and the 133 lbs. needed to make the salt hay equal to medium hay, would cost $2.66.

Mr. W. is getting into the way of selling his best hay and using the poorer hay on his farm. When good hay brings $30, or even $15 to $20 a ton, it is easy to see why he believes so thoroughly in cotton-seed meal.

Other nitrogenous foods would of course do in the place of the cotton-seed meal. Table 21 above gives the composition of some, such as peas, beans, malt-sprouts, etc., from which it is easy to calculate the proper proportions to be used. But let it be remembered that these figures only represent general averages, and in the nature of things cannot be absolutely correct for any special case. Their chief use is for general indications rather than for specific calculations. Some allowances, learned by care in practice, are needed by the variation in quality of hay, difference in animals, etc., but the general principles set forth are of quite practical importance to all breeders of animals.

Would not Potatoes or Corn-meal Suffice, Instead of the Highly Nitrogenous Foods?

In Walks and Talks for last month, the writer thinks I "will allow him to add" corn-meal to my "prescription" for mixtures to be used with poor hays and straws. Certainly, only these "prescriptions" are not mine. They are given by men who have devoted years upon years of time, and thousands upon thousands of dollars of money, to the special study of these questions, by feeding experiments. And they say that in these cases the nitrogenous foods are more economical than the carbonaceous corn-meal, etc. Still, when the former can not be had, the latter may often be used with profit.

Exportation of Cattle for Beef to Great Britain.

This is destined to become an immense and highly profitable branch of business, as soon as arrangements are made for properly conducting it. The first of these, we think, should be the building of suitable steamships for the sole purpose of transporting cattle across the Atlantic. The model of such we leave to the shipwright; but in passing would say, that the greater the breadth of beam in proportion to the length of hull, the more comfortably and economically the animals could be carried. The present class of freight and passenger steamships sailing from New York and other Atlantic ports, are entirely too sharp built and narrow for the profitable transportation of cattle.

In addition to an extra breadth of beam, we would make the ship somewhat wall-sided, as this would greatly tend to prevent rolling, which is a far more wearing and fretful motion to animals on a rough ocean, than that of pitching fore and aft.

As live stock can be had in any quantity in America for transportation to Europe, the largest class of vessels may be built with a perfect certainty that they will always find plenty of freight at good paying rates. No country abroad can successfully compete with us in the breeding and rearing of all sorts of improved domestic animals, we can therefore nearly monopolize the British market; for it is a superior quality of live stock which is most wanted there, and which not only commands the highest prices, but is invariably taken in preference to inferior sorts.

The few shipments hitherto made to Great Brittain of cattle for beef have been so ignorantly and imperfectly conducted, as to result oftener in a loss rather than a gain. If proper arrangements are now made, they may be transported for two-thirds to perhaps one-half the present rates of freight, and still give the ship owners a fair profit on the transportation. This would enable the American farmer to offer his animals in the foreign market at a comparative lower price, and thus more rapidly increase the demand for them. Another great advantage would ensue from adopting improved methods of shipment, and that is, the animals might gain in flesh during the whole voyage rather than lose, as they now generally do, and this on precisely the same kind of food, and at exactly the same cost.

Great Britain and Ireland have been paying a terrible price for many years past on the importation of cattle from the continent of Europe, for it is these which have brought over the fatal diseases that have destroyed so many of their herds, and rendered cattle purchasing from abroad, as well as breeding and rearing at home, so hazardous and unfortunate. The losses from these foul fatal diseases may be reckoned up in a *single decade* at *millions* of *pounds sterling*. From America the United Kingdom would have nothing to fear; our cattle are healthy, and will be kept so. This consideration alone would enable us to obtain the preference in the British market, and ensure us quick and profitable sales for any number not only of beef cattle, but of improved domestic animals of all kinds, that we might please to export.

Mules vs. Horses for Two-wheeled City Carts or Trucks.

We notice that some of the mule-breeders of the west are recommending mules for use in two-wheeled city carts and trucks, in preference to the horse. About twenty years since, being induced to try them for our own city cartage, we selected some of the largest we could find for this purpose. They ran 16½ to 17 hands high, and extra heavy bodied. We used them carefully and faithfully for several years, but were at last compelled to give them up, as far less suitable and enduring for this sort of work than horses.

There were two essential reasons for their failure with us in two-wheeled carts. They were not heavy and compact enough in body to stand the rough jolting and swaying from one side to another of the cart shafts, when a wheel fell into a deep rut or hole, or had to pass over some obstruction in the street. Another difficulty was found in the fact that their feet were not sufficiently broad to clasp the round-topped cobble stones of a city pavement, to enable them to pull their load easily; they would often slip from the tops of the stones as they set them down, which added no little to the fatigue of their work, and both sprained and lamed them.

Mules are generally tougher than horses, can endure worse treatment, and probably thrive on a coarser quality of food. They are also longer lived and less liable to disease. Harnessed to four-wheeled vehicles, working on smooth-paved streets, or McAdamized or ordinary country roads; also for the general purposes of the farm, canal boat towing, under the pack saddle, etc., they are more economical than the horse, and for such usage cannot be too highly recommended.

How to Get Eggs in Winter.

We will not say that the farmer who leaves his poultry to roost in the apple tree at the corner of the barn, and to pick up their living at the pigs' trough and in the barnyard, may not occasionally get an egg in winter. But as a matter of fact their is on most farms a great dearth of eggs from November to March. With a warm shelter, and suitable feed, pullets that begin to lay in the fall will continue to lay through the winter. It is mainly a question of feed. The staple feed is Indian corn, especially in the west, because it is the most plentiful and the most convenient. It furnishes plenty of fat, and keeps up the heat of the fowls, but is poor in albumen and the phosphates. They want a variety of grains and vegetables, and, to do their best, one feed daily of warm cooked meal and vegetables. Most farmers have milk, and if this can be added, it will be all they need. Butchers' scrap cake is good, and may safely be kept in the poultry yard where the fowls can help themselves at pleasure. Boiled potatoes or turnips, mashed and mixed with Indian-meal, make an excellent feed for laying hens. Fowls are particularly fond of cabbages and turnips at all stages of their growth, and eat them raw greedily every day, if they can get them. We have found so good results from feeding cabbages to laying hens, that we always lay in a large supply for the winter. Refuse from the butchers, and offal from the fish-market, also furnish good material for making eggs. These are accessible to most villagers, and can be had at small cost. A hen is only a machine for producing eggs. If you want the finished product you must put the raw material into the hopper. It should not be forgotten that there is a liberal grinding going on in the gizzard, and the laying bird should have free access to gravel with sharp grit, broken oyster and clam shells, which assist in reducing the grains and forming egg-shells. With a plentiful supply of egg-producing food, hens will lay well in winter when eggs bring the highest price.

WASTE OF LAND.—If a farm of 160 acres is divided by fences into fields of 10 acres each, there are 5 miles of fences. If each fence now is one rod wide, no less than 10 acres of land are occupied by them. This is equal to 6¼ per cent of the farm, and the loss of the use of the land is exactly equal to a charge of 6¼ per cent on the whole value of the farm. But nearly every fence row in the country is made a nursery for weeds, which stock the whole farm, and make an immense amount of labor necessary to keep them from smothering the crops. Much damage always results to the crop from these weeds, and if these expenses are added to the first one, the whole will easily sum up to 20 per cent, or a tax of one-fifth of the value of the farm. To remedy this we would have fewer fences, or we would clean and sow down the fence rows to grass or clover, and mow them twice a year. Ten acres of clover or timothy would at least supply a farm with seed and a few tons of hay every year. We would in short consider the fence rows as a valuable part of the farm, and use them as such.

Ogden Farm Papers.—No. 71.

BY GEORGE E. WARING, JR.,

The occupants of country and village houses are generally free from the great dangers that beset those living in towns, where the houses are in communication with poison-generating sewers, in which the accumulated wastes of large populations are festering. But at the same time their domestic arrangements are often so much less complete, that there is a greater accumulation in and about the house, of matters which, by their putrefaction, may generate disease. All who will adopt in some form the practice of using earth, or coal ashes, for the absorption and disinfection of water closets, will find that they can, in an extremely simple way, overcome one of the greatest annoyances, and obviate one of the greatest dangers connected with their mode of life. I say nothing about the advantage to a farmer of saving manure for profitable use, because I insist that this question is one which should be enforced on its own merits, as a measure of health and life. The manure is valuable of course, but any man who needs the argument of profit to induce him to purify and render more healthful the abode in which his wife and children are destined to live, may fairly be presumed to be too dull to appreciate the economy of the practice.

Hardly less important than the closet question, and so far as it relates to the production of fevers, not seldom, even more important, is the question of the kitchen drain. Nothing enters this except soap and grease, and the refuse of the cooking, all of which are in themselves comparatively inoffensive, and certainly not dangerous matter, but once accumulated and allowed time for decomposition, (usually covered from the light and where the circulation of air is imperfect), they enter a state of putrefaction in which they throw off gases that are dangerous in themselves, and are often the vehicle of the seeds of disease. The trouble with the kitchen drain, however constructed, arises chiefly from the fact that it contains a large quantity of grease melted by the hot water accompanying it. This goes forward in a fluid form until the water has become sufficiently cold for it to harden, and then it attaches itself to the sides of the drain, or to crumbs of food or other organic matters which have attached themselves to previous deposits, and in this way, sooner or later, the drain becomes either so much choked that its flow is greatly interrupted, and thus decaying material gathers near the house, or that the greasy accumulation is in itself sufficiently large to produce the worst results on its decomposition at this short range from the kitchen. As a rule, the best made kitchen drains, as they now exist, are the worst. They have most of the inherent difficulties to which I have referred, are permanently so hidden from sight that their condition is not easily detected, and communicate with the inside of the house by a tight lead pipe that has often some sort of a trap, which is literally a trap to catch ignorant victims. As a means for preventing the ingress of air from the drain, this trap is exceedingly defective, and the "hell-trap," so often used, aside from having too little water to be of any effect, is constantly being lifted off to clean the sink, opening a still freer vent to the accumulated air of the drain.

It is not necessary here to go into the full question of the construction of sinks and drains, and their connection pipes, but it does seem worth while to describe the use of Field's Flush-tank, of which I have before written, and which I have had for some time in use at my own house. Owing to the arrangement of my irrigating drains, and to the fact that my land is nearly level, the drain leading from the kitchen begins at a depth of only one foot below the surface of the ground, and only five feet below the level of the kitchen sink. The flush tank is about two feet and a half high, its outlet two feet below its top, therefore we could only bury it a little more than half its depth in the ground, and in order to protect it against frost, were obliged to house it in and pack it around with leaves, a protection that has been found amply

sufficient in the recent very cold weather. The action of this tank is as regular and perfect as could be asked. It is automatic, it holds about a barrel of liquid, and when once filled, the flow of a

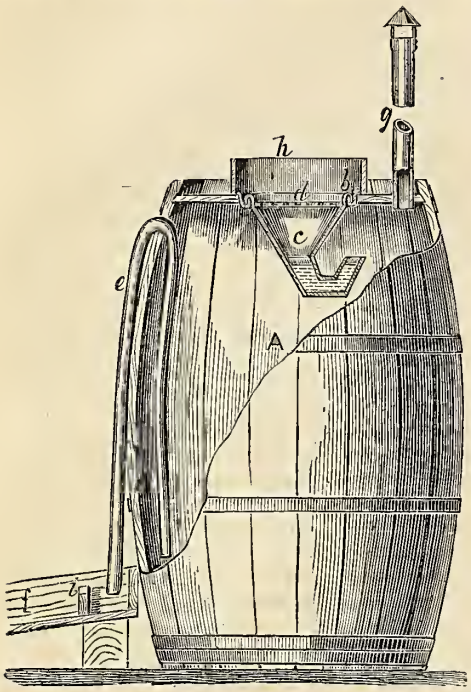


Fig. 1.—AUTOMATIC TANK MADE FROM A BARREL.

continuous stream from the sink, (such as would come from the emptying of a dish-pan), fills this siphon, which continues to flow steadily until the contents are lowered to the level of its mouth. Except during the action of the siphon, there is no flow whatever through the drain. I have found that in less than two minutes, about two-thirds of a barrel of liquid, (already accumulated in the tank), flows through the drain in a cleansing stream, which an examination shows to have left no refuse matters in its course. This tank is not yet made in America, and owing to its size and the cost of importing it, it is not likely that it will for the present come largely into use. In the meantime, the inventor has taken no patent in this country, and the invention is open to the use of all who choose to adopt it.

The accompanying illustrations show how a perfectly efficient and satisfactory flush-tank may be made from a kerosene or other tight barrel without much expense. The barrel must be a sound one, with its hung well secured, and both of its heads in good order. Cut a circular hole in the upper head, twelve inches in diameter. Half way between the side of this hole and the chime, make another hole two inches in diameter. Finish the larger hole with an edging made of lead or copper, lapping over about an inch, and being securely nailed fast in a bed of white lead. This metal should be beaten in a groove or gutter just inside of the large opening, having its edge turned up at a distance of one inch from the edge of the hole. The head will then have an opening ten inches in diameter, surrounded by a channel three-fourths of an inch, or an inch deep, and one inch wide. A funnel of the same metal, (tin or galvanized iron would soon rust out), should be made to fit in this groove, its upper edge being turned over about an inch for the purpose. This funnel at its lower end should be furnished with a pipe turning up in such a way as to constitute a trap. Near the top of the funnel there should be a shoulder capable of supporting an ordinary round stove-grate of cast-iron; this grate is intended to keep back any coarse matters which might obstruct the siphon, and to serve as a weight to keep the funnel in its place. Into the two-inch hole in the barrel top insert a ventilating pipe, which may be of tin, and which should be carried to the highest convenient point well away from any window or chimney top. Through one side of the barrel close to the top, make a hole large enough to receive a 1¼ inch lead pipe, which being turned down to within 6 inches of the bottom inside, and 2 or 3 inches lower at the outside is to constitute the siphon for emptying the barrel—this pipe should not be larger than 1¼ inches interior diameter, as the larger the pipe the greater the amount of water needed to start it into action. The outer end of this pipe delivering into the drain is partially shielded from the access of air by an arrangement which will be described further on.

Fig. 1 shows the arrangement of the whole apparatus. *A* is the barrel, *b* is the metal rim, or gutter surrounding the opening; *c* is the funnel with its trapped outlet; *d* is the iron grate; *e* is the siphon; *f* is the outlet drain; *g* is the ventilator; and *h* is a simple cylinder of galvanized iron or tin, to be used when the top of the barrel is above ground, so that it may be well packed around with leaves or litter without danger of these getting in to choke the grate. Where such packing is necessary, the whole affair should be housed in to protect it from the wind, and indeed it is always necessary to prevent the blowing in of rubbish which might plaster itself over the grate and prevent the water from entering.

Fig. 2 shows more in detail the construction and arrangement of the rim, the funnel, and the grate. The gutter of the rim will always be kept full of water from the small amount splashing over, and this serves to seal the channel at this point just as the bent pipe at the bottom of the funnel seals its outlet. These seals are not liable to be forced, because of the ample air channel furnished by the ventilator.

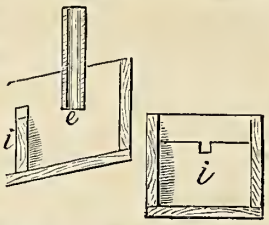


Fig. 3. OUTLET. Fig. 4.

Fig. 3 is a longitudinal section, and fig. 4 a cross section of the outlet drain, show the arrangement for checking the flow of the siphon. A dam (*i*) which may be of wood, brick, or any other suitable material, closes the drain in front of the siphon to a hight a little above its lower end. This is notched down at its top to a point just below that of the end of the siphon, in such a way that after the barrel is discharged, the siphon itself will be emptied and will fill itself with air. This notch is too small to accommodate any considerable flow of the pipe, and the dam checks back the first water running, and helps to bring the siphon into action, but after the flow has all passed over, it lets the water behind the dam fall low enough to admit air to the pipe. I do not know that anything further is necessary in the way of practical directions, except to say that the siphon pipe had better be attached to the side of the barrel, outside and in, by bits of tin tacked over it so as to prevent its being injured. Indeed, the whole siphon might be inside of the barrel, its lower end passing out through a hole near the bottom; this arrangement entirely obviates the danger of its becoming jammed, or the possibility of a trickling flow through it being frozen until the accumulated ice would quite close it.

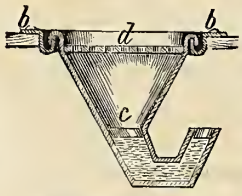


Fig. 2.—FUNNEL.

The discussion concerning the deep or shallow setting of milk, and the temperature at which cream rises best, is still going on with considerable activity in different parts of the country. Each side has its partisans, and those who adhere to shallow setting are urging me to produce "my evidence," "prove my claims," etc., etc. In reply to all of which I have only to say that I make no assertions, and advance no claims. I have stated during the past three or four years exactly what our experience has been in setting our milk in deep cans immersed in spring water, giving the results as compared with our former practice of shallow setting;—without accuracy, because I have never made any accurate comparative trial. I am satisfied that so far as our own dairy is concerned, we are making very nearly, if not quite as much butter as we did under shallow setting, and that its quality is *always* as good as it was with the old method, even under the most favorable circumstances. This satisfies us that we are on the right track, and even if we did lose something in quantity, we gain enough in quality to much more than make up for it, especially as our butter is sold at a high price to customers who would at once abandon us and throw us on the common market if there were any falling off in the *quality* of our supply. We had much better sell 10 pounds of butter at a dollar a pound, than 30 pounds at thirty-three cents a pound, and we are practically sure that with us there is not a difference of five per cent one way or the other, between the amounts made by the different methods. If Ogden Farm were an experimental farm carried on for the good of the public, or a model farm, carried on for the benefit of our own reputation, I might think it worth while to make the experiments, that those who are most active in the discussion are urging me to make, but as it is simply a business enterprise where the sole aim is to get the most profitable result, I cannot run the risk of interfering with the quality of my product for the sake of entering into a discussion solely for the public good—much as I am interested in this. Then, too, there would be a danger that I might go the way of these contestants, and patent some invention in connection with the setting of milk, the construction of milk rooms, or the manufacture of butter, which seems so often the end of enthusiastic partisanship on this question. I do not of course object, but on the contrary, applaud the inventive genius, and the enterprise of all who devise new processes in connection with the dairy; I only mean that that sort of thing is out of my line. I trust that the dairy experience at Ogden Farm has resulted in benefit to the public, and the many letters that I have received asking more minute information as to our methods, indicate that a wide interest is taken, and wide confidence felt in what we have done, and I shall be glad if we may long continue to exert in this way a quiet influence toward general improvement. But while we see in this a real compensation for what we are doing, I must decline all invitations to prove the truth of what I may say as to processes or results. Statements made in these papers are made as statements of fact, if they are not so accepted I am, of course, sorry for it, but I do not propose to take the trouble of adducing proof in their support.

I have a letter from New York State from one who does not wish his name given, as he expects next year to make a more favorable report, but his present one seems to me too good an illustration of the value of grade Jerseys not to be published. The animal is just three years old now, she had her first calf February 28th, 1875, and is due to calve again January 20th, 1876; when fresh she weighed 740 lbs. Her dam is a common cow; her sire, a thoroughbred Jersey bull; her feed was what she could get in a stalk field and clover pasture, with three quarts of bran night and morning. She was kept in the stable over night with no other feed but the bran. She yielded in one week "119 lbs. of milk, (about 51 quarts). I made from that milk 8 lbs. 8½ ozs. of as nice butter as you would want to see, (solid butter as yellow as gold); Jersey cows are the cows for me."

Mr. Enoch Pratt, of Baltimore, writes as follows: "From October 1st, 1874, to October 1st, 1875, four cows, (Jerseys), furnished the milk used by my farmer, who kept the calves, eight or ten weeks each, and furnished my large family from the 20th of June to October 1st, with all the milk and cream required, (and it was used lavishly), and made in the year 975 lbs. of butter, showing, I think, as good a result as any I see, although for short periods some cows no doubt have made more, but my cows go through the year." This last point is an important one, for it is not the least of the merits of the Jerseys that they hold out their milk very nearly to the time of calving, which is of special advantage for family use, and which even for the dairyman secures him a fair supply at seasons when butter is higher than in the flush of summer feed.

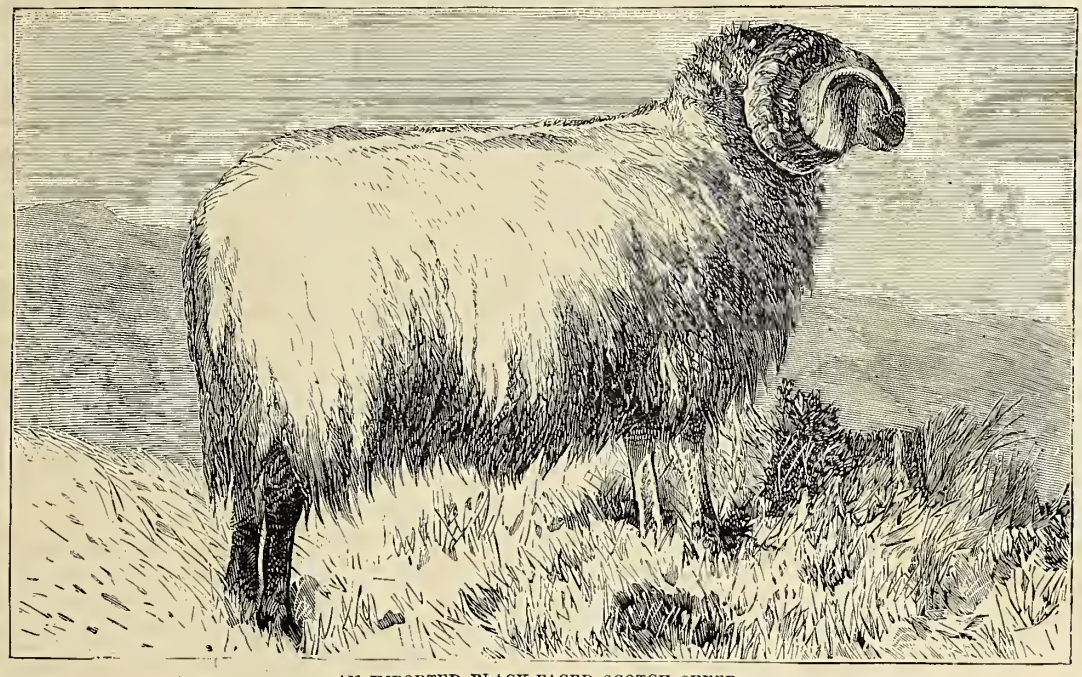
The Black-Faced Scotch Sheep.

A recent importation of Black-faced Sheep from Scotland, by a resident of the western plains, has tended to bring this hardy and useful race into notice. A flock of these sheep has been kept in Illinois for some years past with success, and they have proved themselves well adapted to the climate and soil of that locality. These sheep will be still more suitable for the mountains, valleys, and plains of Colorado, and the territories further north, and also for the Alleghany ranges, than for the rich pastures of Illinois. This race is remarkably hardy, and for some centuries have been accustomed to subsist on the coarsest fare, and in the most exposed situations. Used to the most violent snow storms, they are well able to take care of themselves, under conditions where no other sheep could survive. Cases have been known in which portions of a flock, caught in a sweeping snow storm, have been overwhelmed in the drifts, and yet have come out safely, after an imprisonment of many days. In case of a sudden storm they instinctively crowd together, and as the snow gathers about them they push and pack it in a compact wall around them, until finally they are enclosed as by the sides and roof of a cave. Here they remain until they are discovered by the keen scent of the shepherd's dog, or until the snow thaws sufficiently to allow them to break through and escape. Even the lambs will survive hardships that few full grown sheep of other breeds could resist. These sheep are small and active; the horns of the ram are large and spirally twisted, while in the ewe they are smaller, and are often wanting. The form is robust, and the flesh remarkably succulent and palatable, possessing a peculiar venison flavor, which causes the mutton to be preferred to all other kinds by those accustomed to it. The weight of the carcass is about 60 lbs. at four years of age; when well fed and cared for, from an early age, this weight may be largely exceeded. The fleece yields three pounds of washed wool, of medium length, and coarse fiber, and is in demand for carpets and coarse cloths. When care is taken to select for breeding those animals which have the best fleeces, very considerable improvement can be made in the character of the wool.

There is no doubt that, with the excellent pasture furnished throughout the year by our western plains, a rapid improvement could be made in these sheep, and an acclimated breed obtained, which would be very valuable for the production of flesh, and also wool that would be suitable for our home manufactures of the less fine woollens.

As an animal for crossing upon other breeds, it is not a success, except with the Southdown. It has been used in this way with the effect of producing handsome sheep, with very black faces and legs, and a good, close, useful fleece, and excellent, very hardy and thrifty early lambs. There can be little doubt that this breed could be used with profit to improve the poor Mexican sheep, which are common in the far west, and to produce a better carcass than the cross with the Merino, even if the fleece is not so valuable. In Scotland these sheep are kept in large flocks, one proprietor owns 40,000, and there are very many flocks of over 5,000.

They rarely reach maturity upon their native pastures, being generally passed through several hands before they reach their final destination—the markets of the English cities. In their migrations they are made to pasture for a season, or to consume turnips, upon which they are folded, and are often fattened upon oil-cake-meal on some of the highly farmed English estates. They are brought to market at maturity, or when 3 to 4 years old.



AN IMPORTED BLACK-FACED SCOTCH SHEEP.

Jersey Cow "Maggie Mitchell."

The portrait here given is from a photograph of the Jersey cow "Maggie Mitchell," owned by Mr. M. Y. Tilden, of New Lebanon, N. Y. This cow is an extraordinarily large butter producer, and in this respect she is probably not surpassed, if equalled, by any other in the country. She was bred by Mr. Thomas Fitch, of New London, Conn., and sired by his bull "General Scott." She now weighs 1,020 pounds. She gave from April 12th, 1874, to Jan. 1st, 1875, 6,506¾ lbs. of milk, and after the latter date, before the year expired, enough more to bring her yield within the year up to 7,500 lbs. An attack of garget reduced her yield at least 500 lbs. She "came in" the past season on the first of September, and on pasture alone, was giving in October, at the rate of 1,000 pounds of milk per month. Her public reputation was made in 1873, when in the first 15 days of September, she made 35 lbs. 11 ounces of solid packed butter, which was soon afterwards exhibited at the N. Y. State Fair at Albany. Previously, in July of the same year, when she was yielding 38 lbs. of milk daily, a trial of her butter yield was made for one week, the first seven milkings produced 9 lbs. 6 ounces of butter, or at the rate of 18¾ lbs. per week. Some thunder showers happening the latter half of the week, the test was not continued. In this test one pound of butter was produced from 6 6/10 quarts of milk. Another and very careful test was made the same season in the month of August, in the presence of Col. M. C. Weld and Dr. F. M. Hexamer, two gentlemen whose testimony is beyond doubt. The cow was milked in the presence of these gentlemen, early in the morning, and the milk, which weighed 16¼ lbs., was cooled in a tub of cold water, and immediately churned. The result was a pound and a quarter of butter from this half day's milking. The cow had been milked as usual the previous evening, in the presence of Messrs. Weld and Hexamer. Maggie is a fine looking, good sized cow, fawn and white in color; the fawn shading to dark brown on the fore-quarters and about the head; skin very yellow; body capacious; limbs fine; head bony and handsome. She has a rather large bag, evenly quartered, rich in color, with large milk veins and broad and high milk mirror. Altogether she has the look of the good milk and butter cow which she is, but there is nothing in her appearance that any one

JERSEY COW "MAGGIE MITCHELL," OWNED BY M. Y. TILDEN, NEW LEBANON, N. Y.

would consider extraordinary. The heifer calves of this cow promise to equal their dam. They have the following record:

"Maggie Mitchell 2nd," 7 years old; yielded from June 5th to January 1, 1875, 208 days, 5,088½ lbs. "Maggie Mitchell 3d," 3 years old in 1874, yielded from May 20th to Jan. 1st, 1875, 223 days, 3,352 lbs. "Maggie Mitchell 4th," 3 years old, was small and not allowed to come in until 3 years old; she yielded for June and July, 21¾ lbs. per day. To this record Mr. Tilden adds: I have repeatedly tested the milk of my Jerseys, and find that 7 quarts is a very safe estimate for a pound of butter. For the month of June, 1874, the average for 13 head was $16^{23}/_{100}$ lbs.; or $7^{54}/_{100}$ quarts; this milk was set in a spring, the temperature of which is 47°, and that left after skimming would pass for pretty good milk. On the 20th of Nov. last, we skimmed 131½ lbs. of milk, and obtained 21½ lbs. of cream, from which was made 11 lbs. of butter; thus using $11^{96}/_{100}$ lbs., or 5.56 quarts of milk for one pound of butter, nothing being allowed for the slight shrinkage while set.

Mr. Tilden has recently made an addition to his herd, of nine cows and heifers, which he imported from the Island of Jersey. These animals were selected for Mr. Tilden by Col. M. C. Weld of New York, who visited the Island for that purpose, and were chosen with the greatest care and deliberation for their butter yielding capabilities alone. Some of these cows have given 12 to 16½ lbs. of butter per week in an actual test.

Southern Agriculture.

The Commissioner of Agriculture of the State of Georgia, Thos. P. Janes, Esq., is doing a work of the greatest value to agriculture in the southern states. He is now issuing a series of circulars, containing information respecting the crops grown, and kinds of stock kept in the state, with suggestions as to the methods by which they may be improved and increased in value. From one of these circulars, (No. 21), which contains "A Consolidated Report of Crops, etc.," for last year, we gather some very valuable, not to say surprising information. This is valuable as showing the promising condition of southern agriculture, now that its defects and mistakes are clearly seen, and in process of being removed or corrected, and surprising as showing from what comparatively poor returns the southern farmer can make a living, if not a good profit. That a profit can be made from a crop of only *nine* bushels of corn per acre, is a surprising evidence of the cheapness of labor and cultivation, in a climate under which farm operations can be carried on during every month of the year, without hindrance from frost or snow. Now that the intelligent farmers of the state have combined to investigate the possibilities of their soil, climate, and supply of cheap labor, and experiment upon more promising crops than that of cotton, they can hardly fail to change the system under which they have been contented with the most meager crops, for one through which they can greatly increase their productions. The report referred to shows that the yield of cane syrup is equal to 192 gallons per acre, which sells for 68 cents per gallon, giving a total gross income per acre of $130.56. The cost of raising a gallon of syrup is 28 cents, or with the above yield, $53.76 per acre; leaving the net profit equal to $76.80 per acre. Twelve gallons of syrup are make from 100 gallons of cane-juice. The production of syrup is more profitable than that of sugar. The culture of sorghum has very largely increased of late. The average yield is 73 gallons per acre. It sells for 66 cents per gallon, producing $48.18 per acre, which leaves a profit of $27.74. Fifteen gallons of syrup are produced from 100 gallons of juice. The average yield of corn is nine bushels per acre. The greatest yield reported is as high as 30 bushels per acre, while the least is but five bushels. When peas, (the southern pea, and altogether different from the field pea of the north), are sown with the corn as a catch crop, the average yield is only 4 bushels per acre. The cost of a crop of corn and peas is $8 per acre, and the value of the crop, including only 185 lbs. of fodder, is $16.32 per acre. The average yield of "ground peas," or "goubers," which are grown for feeding hogs, is 28 bushels per acre, that of sweet potatoes is only 60 bushels per acre. All these crops, notwithstanding the very small yields, are grown with profit. The most common crop, cotton, on the contrary, has been produced at an actual loss the past year. The crop amounts to 400,000 bales, which cost the producers $2,000,000 more than the market value. The average yield is 412 lbs. of seed cotton per acre, from which about 137 lbs. of lint is produced. The cost of the crop is about $16 per acre, or with this yield about 12 cents per pound.

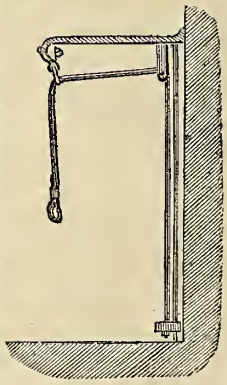
These returns compared with what might be expected under a better system of culture, are such as a northern or western farmer would consider ruinously poor. A more intelligent management could not fail to greatly increase them, both in quantity and profit. The first help to a better way, is to discover the necessity for a change. The next is to give an earnest effort to make the needed change. The fact that the Georgia farmers have organized a Department of Agriculture, and have set themselves resolutely to improve their condition, promises well for their early success in gaining this end. A convention of the correspondents and experimenters of the Department, is called to meet at Atlanta, on the 25th of the present month, for the purpose of discussing subjects of vital interest to the farmers of the state. This is better, and will be productive of more satisfactory results, than crying out for immigration which does not come, and is not likely to come while the returns from agriculture remain so poor and unattractive to northern or foreign farmers. The case of southern agriculturists generally, and those of Georgia particularly, is clearly one in which they will be helped the more, the more they help themselves.

Business Habits.

There is probably not one farmer in ten thousand who keeps a set of accounts from which he can at any moment learn the cost of anything he may have produced, or even the cost of his real property. A very few farmers who have been brought up to business habits keep such accounts, and are able to tell how their affairs progress, what each crop, each kind of stock, or each animal has cost, and what each produces. Knowing these points a farmer can, to a very great extent, properly decide what crops he will grow, and what kind of stock he will keep. He will thus be able to apply his labor and money where it will do the most good. He can weed out his stock and retain only such animals as may be kept with profit. For the want of such knowledge, farmers continue, year after year, to feed cows that are unprofitable, and frequently sell for less than her value one that is the best of the herd, because she is not known to be any better than the rest. Feed is also wasted upon ill-bred stock, the keep of which costs three or four times that of well bred animals, which, as has been proved by figures that cannot be mistaken, pay a large profit on their keeping. For want of knowing what they cost, poor crops are raised year by year at an actual loss, provided the farmer's labor, at the rates current for common labor, were charged against them. To learn that he has been working for 50 cents a day, during a number of years, while he has been paying his help twice as much, would open the eyes of many a farmer who has actually been doing this, and it would convince him that there is some value in figures and book accounts. It is not generally understood that a man who raises 20 bushels of corn per acre, pays twice as much for his plowing and harrowing, twice as much for labor, and twice as great interest upon the cost of his farm, as a neighbor who raises 40 bushels per acre. Nor is it understood that when he raises a pig that makes 150 pounds of pork in a year, that his pork costs him twice as much, or the corn he feeds brings him but half as much as that of his neighbor, whose pig weighs 300 pounds at a year old. If all these things were clearly set down in figures upon a page in an account book, and were studied, there would be not only a sudden awakening to the unprofitableness of such farming, but an immediate remedy would be sought. For no person could resist evidence of this kind if it were once brought plainly home to him. If storekeepers, merchants, or manufacturers, kept no accounts, they could not possibly carry on their business, and it is only because the farmer's business is one of the most safe that he can still go on working in the dark, and throwing away opportunities of bettering his condition and increasing his profits.

Tie for Use in Stables.

There are few cattle-ties that are absolutely safe to use. The chief danger in the chain-ties is that they may become loosened, and in the rope-ties that the animals may entangle their feet, and be thrown in the stall. The consequences of either accident may be disastrous. A tie that is very safe is shown in an illustration, which we borrow from the London "Agricultural Gazette," and which is in use in English stables for both horses and cattle. It is made of rope not less than three-quarters of an inch in diameter, to the end of which is fastened a weight, sufficiently heavy to keep it always drawn tightly through a ring, fixed to the side of the stall, except when the animal lies down, or moves backwards, when the weight is drawn up. This weight slides up and down on an iron rod. There is thus never any slack left in the tie, over which the animal can put its foot, and get cast or fast. With this tie there should always be used a stout head-stall, to which the upper end of the halter should be safely and permanently fastened. A blunt or a peg hook should be placed at the upper end of the stall, upon which to hang the head-stall when not in use. If this is not carefully done, the head-stall will lie in the filth, and become disagreeable to handle; yet this happens very frequently in stables.



STABLE-TIE.

The Yield of Wheat.

The wheat crop as the chief food grain of the world, ought certainly to be grown with profit. If this staple crop is by universal consent admitted to be an unprofitable one, there must necessarily be something wrong in its management. No other crop can take its place under our present system of farming, for it is in the vast majority of cases made the vehicle for bringing in grass and clover, and its place in the usual rotation cannot well be filled by any substitute. But there is a universal complaint that there is no profit in growing wheat. This is very generally true, but it does not follow that the blame belongs to the wheat, for with some farmers wheat is by far the best money crop they raise. But these farmers raise far more than the low average of 12 or 15 bushels per acre. It may be taken as a general rule that a yield of less than 25 bushels of wheat per acre is grown at a loss, at least in those localities where it is necessary to use manure to produce this grain. Where the "virgin soil" is still unexhausted, and manure is left to rot idly in the yards, or to be washed into the streams, there may still be some little profit in 20 bushels per acre. But where 10 to 20 loads of manure per acre is used every four years, and lime, superphosphate, or other fertilizers are applied periodically, in addition; a crop of even 25 bushels is hardly profitable. Still a larger yield than this is the exception rather than the rule upon well cultivated farms. An elaborate effort has been made recently by Mr. Klippart, the Secretary of the Board of Agriculture of Ohio, to ascertain how frequently

40 bushels of wheat per acre has been grown by farmers in that state. A circular was issued to the secretaries of the county agricultural societies requesting the names of those farmers who had within their knowledge grown 40 bushels of wheat or over per acre. From Champaign County five names were reported, three of these farmers had grown 40 bushels, one 45, and one 51 bushels per acre. In Hardin County, two names were obtained. Mercer County furnished six names; Morgan County, one; Putnam County, one; Shelby County, three; and Sandusky County, three names, one of which was that of a farmer who raised 61 bushels per acre. With these few exceptions, the yields reported were a few of 30 bushels or more, many of 25 bushels, and in many cases the latter yield was mentioned as an extraordinary crop. In some cases the yield was reported as being little more than the quantity of seed that had been sown. It is largely the custom in Ohio to sow the wheat upon the corn stubble, simply harrowing in the seed or covering it with one plowing or cultivating. Where this is done, a profitable yield cannot be looked for, even upon the rich bottoms of that generally fertile state. The few large crops reported are without doubt raised in a different manner from this, although we have no means of knowing the methods by which they were grown. It is the same in other states. Forty years ago, forty bushels of wheat per acre was very common in western New York and Ohio, where now a third of that quantity is an ordinary crop, and a half of it a good one. It is doubtful if any other state in the whole country could make a better showing than Ohio, although the average yield of wheat is slowly increasing in the older states. It is on the way to a minimum in the latest settled of the western states, California included, and will there be some years yet before it will reach a turning point. The incentive to a better management of the wheat crop is a powerful one. It is the necessity for the means of living in comfort. A farmer who raises 12 bushels of wheat per acre can hardly be said to live, he exists, but cannot live in comfort upon such an income, nor can he make life upon his farm desirable to his children. Necessity must force him to improve his mode of culture, and to prepare the ground very much better than he has done heretofore. A low price for wheat relieves the American farmer from much foreign competition, and it is hardly probable that we shall see the price of wheat advance much above the present rates, unless as a consequence of a light yield. But a doubled yield is equal to a doubled price, and we can safely produce such a crop, inasmuch as with the high rents paid by English farmers, and the greater profit in grazing, wheat growing in that country, which is our best customer for wheat, is yearly decreasing in extent. To produce this doubled crop is not impossible; the fact that some farmers do it, proves that others may do it also.

The Effect of Fashion in Stock Matters.

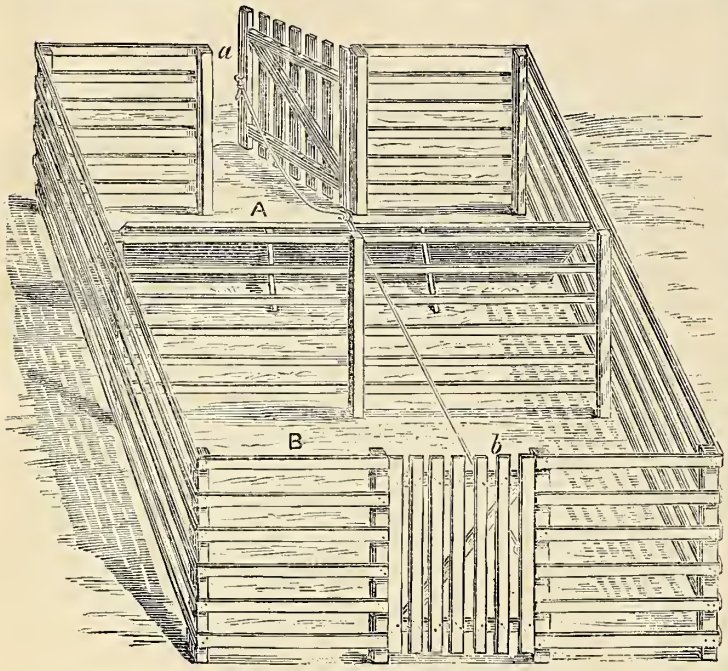
The results of some recent sales of pure-bred stock of different breeds, are well worth more than a passing notice. It has never yet occurred that a class of stock, however popular it may have been for a time, included in itself every possible valuable characteristic. We have never yet had one breed of cattle that met every requirement of the farmer, dairyman, grazier, or butcher. It is not probable that we shall ever produce or possess such a breed. When any one breed or class of cattle threatens to become so popular as to cause all others to be neglected, and to seriously reduce their marketable value, past experience would lead us to expect that the climax of its popularity has been reached. We learned this lesson a few years ago, when no sheep except Merinos were considered worth keeping, and we may be in danger of receiving another similar lesson before long in regard to Short-horn stock of the more fashionable sorts. The recent sales of Short-horns in Kentucky, and of Ayrshires and Devons elsewhere, go to prove this unmistakably. In the Kentucky sales it is noticeable that Short-horns, of excellent character and good pedigree, sold for prices that were equivalent to their value for beef, and no more; while a three month's calf of a more favored family, undeveloped and of no certain promise as to the future, brought the remarkable price of $17,500, and has since been resold for $22,000. Such an occurrence is strong evidence that, so far as regards these fashionable cattle, we are in the well developed stage of a decided mania. When $15,000 was offered and refused for a Merino ram, not many years ago, we were in just such an excited condition, from which we soon emerged to find the price of rams fall to $50, or in some cases as low as $10, which was somewhere about their intrinsic value. Not long since those excellent cattle, the Devons and the Ayrshires, for some localities and circumstances unsurpassed by any breed whatever, bore a money value somewhat on a par with their real worth. But the past few months some of these cattle, of faultless character and high breeding, have been either offered without buyers, or have been sold at prices below those which could have been realized for extra good native stock. Of the Herefords, at one time considered to be the peers of the Short-horns for the production of cheap and excellent meat, upon moderately strong pastures, nothing is now heard, and they are almost entirely neglected. The owner of a well known herd of Ayrshire cattle recently sold his stock for a small portion of their value to make room for a herd of Short-horns. The excellent herd of Devons owned by Mr. Mattoon, of Springfield, Mass., was recently withdrawn from public sale on account of the inadequate prices offered. The result may be unfortunate for those persons who at this late period of the excitement in regard to Short-horns, go into the speculation of breeding them, with insufficient capital, or without the nerve to bear possible future losses without repining; and it will be equally unfortunate for those who are tempted to neglect the improvement of their stock by means of unfashionable breeds, because of the present neglect with which these breeds are regarded, or because they are dazzled by the more brilliant record of others which are beyond their reach. The Short-horn may be the most profitable animal to keep on the blue-grass pastures of Kentucky or Ohio, or the rich valleys of the Mohawk or the Genesee, or wherewith to cross the long-legged and long-horned Texan; but it cannot be kept with profit where it is obliged to climb hills to its pasture, nor where the meadows are not always in condition for the scythe; nor can it be profitably fed in stalls upon meal. It has its place, and it will fill that better than any other breed. But so has the Hereford, the placid, gentle feeder which never loses an ounce of flesh through ill-temper or nervousness, and which thrives upon second-rate pastures, and makes a heavy weight of the best beef. So also has the Devon, which as a working ox surpasses any other, and which on hill pastures will produce most acceptable beef with profit. Neither can the reputation which the Ayrshire has acquired in two centuries as an excellent dairy cow, be suddenly destroyed by the Short-horn, which for nearly a hundred years past has been losing its dairy qualities by a course of high feeding and breeding. It is said that the best time for one to acquire a good thing cheaply, is when everybody else is anxious to dispose of it, and if this be true, it is certainly a good time now to procure excellent pure-bred stock of the neglected varieties, while the majority of breeders are pursuing the more promising but more risky business of dealing solely in Short-horns.

A School of Shepherds.—A school of shepherds is established at the national sheep farm of Rambouillet, France. In this school young men, over 15 years of age, are instructed in all the arts of sheep husbandry, during a term of two years. After passing creditably through this term, and a final examination, the graduates receive a "certificate of capacity," and the most capable are rewarded with a prize of $75, the second best receive $50. They then become apprentices, and can either go to keeping sheep for themselves, or seek employment from owners of flocks.

Trap for Sheep-Killing Dogs.

A correspondent from Spencer Co., Ind., sends a sketch and description of a trap for catching sheep-killing dogs, which may be useful to owners of sheep that are subject to depredations by those animals. In many places the losses by dogs are so great as to prevent the keeping of sheep altogether; thus this profitable and agreeable industry is made impracticable over the greater portion of the country, unless such precautions are taken, as will add greatly to its trouble and cost. With small flocks only, this extra cost and trouble are too onerous, and it is only where sheep are kept in large flocks that it will pay to employ shepherds to constantly watch them, or take other necessary precautions. In several of the states—West Virginia and Tennessee more particularly—very stringent laws have recently been enacted for the protection of sheep against dogs, which will go far to encourage the raising of flocks. In other states, where the influence of the owners of dogs is of more weight than that of sheep-owners, these latter are obliged to look out for themselves, and protect their sheep as they may be able. For such the contrivance here described and illustrated, may be useful. It is made as follows: In the meadow or field, where sheep are pastured during the day, a small pen, eight feet square, is made, and fenced strongly with pickets or boards. This pen is divided into two parts (*A*, *B*, in the engraving) by a cross-fence. The pen is wholly covered over on the top with strong lath. Two gates (*a*, *b*) are made so that they will swing open of their own accord, and remain so, unless held closed or fastened. The gate, *a*, is furnished with a latch, by which it is fastened when closed. This gate is intended to admit the dog into the part of the pen, *A*, when he is attracted to it by a sheep confined for the purpose in the other part of the pen, (*B*). In the part of the pen, *A*, is a heavy board, reaching across it. One edge of this board rests upon the ground against two pegs, which keep it from slipping backwards. The other edge is kept up by means of two shaky slender supports. A rope is fastened to the upper edge of this board, and to the gates, so that one half of it, when the board is propped up, allows the gate *a* to swing open, and the other half holds the gate *b* shut, and thus keeps the sheep confined. The trap is now set. A dog, prowling in search of mutton, finds the sheep, and seeks an entry into the pen. He finds the open gate, and rushes in, over the board set upon its edge, and knocks this down. This closes the gate *a*, which is at once latched and fastened. The gate *b* is allowed to swing open, and the sheep is liberated, and, of course, proceeds homeward without delay, while the dog is imprisoned. We need not suggest any method of dealing with the prisoner, as there are many, more or less effective, which will suggest themselves. We think it would be an improvement upon this plan, if the sheep be confined in the pen, where it can be seen by the dogs, and an additional apartment, if not more than one, made, in which other dogs could be trapped. Sheep-hunting dogs usually go in couples, and if only one dog were trapped, the sheep escaping from the pen would be caught by the other, before it could reach home. With two or three traps all the dogs could be caught, and in a short time the locality would be rid of them, or, being identified, their owners could be made responsible for their trespasses. It would be necessary to have the pen made very strong, so that the dogs should not tear their way out of the trap, or into the pen in which the sheep is confined. Stout wire-netting would make a safe fence. So far as regards what are called dog-laws, it would be well if these should provide, amongst other things, that every dog must wear a collar, bearing its owner's name; that the owner of any dog which is caught in pursuit of sheep upon the property of any person other than the owner of the dog, should be held liable for damages for the trespass, and that any dog caught trespassing, and being without a collar bearing its owner's name, should be destroyed by the person capturing it. As any citizen has as much right to keep a dog as another has to keep a sheep, without being taxed for

it, and can only be held liable for what damage his dog may do, it does not seem just that any tax should be levied upon dogs. The only just claim that can be made by a sheep-owner is that he shall be protected in the enjoyment of his property, and

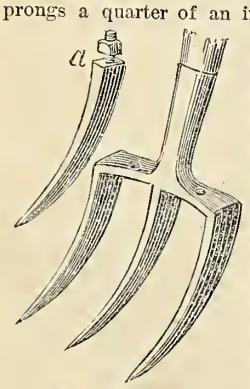


TRAP FOR SHEEP-KILLING DOGS.

that the person by or through whom he is injured, should recompense him. In the case of irresponsible owners of dogs, from whom no recovery can be made, the dogs should be destroyed by a proper officer. If the right of persons to keep dogs, when they wish to do so, without being taxed, is recognized in this manner, much of the opposition to the enactment of what are called "dog-laws," would be removed, and the protection of sheep made much less difficult, and productive of much greater profit.

A Stone Picker.

Picking up stones is an almost endless job upon some farms. Every year it may seem as if the work was finished, but another plowing turns up a new supply. Much of this work, however, may be done during the winter months, when there is little or no snow, upon days, when the sun is bright and warm. Then the sun's heat is absorbed by the stones, which are warmed and loosened from the frozen earth around them, and they may be readily picked up, and thrown into a wagon or sled. To prevent the disagreeable necessity of stooping for every stone, the stone-picker shown in the engraving may be used. This is made very strongly with prongs a quarter of an inch thick, and an inch broad at the top, tapering to a quarter of an inch at the point. The shoulder is made broad and square, so as to serve as a foot-rest, by which it may be pushed into the ground at one side of the stone. The prongs are curved, and the central one is depressed below the range of the others, so as to form a hollow, in which the stone may lie as it is lifted from the ground. A common long shovel-handle will serve for this tool, and it should be very firmly fixed in a strong socket, so as to resist the strain of prying a heavy stone out of its bed. This implement may also be used to dig potatoes, or lift roots. For the former purpose two additional prongs should be fitted and fastened between the others, by means of a screw-nut and a hole drilled in the shoulder or foot-rest, as shown at *a*.

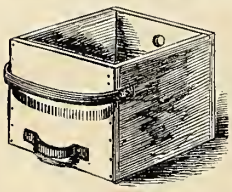


STONE PICKER.

A Feed Measuring Box.

The most convenient feed box we have used, was one holding one-tenth of a bushel. This was once a miller's "toll box," or the measure with which a miller takes out his tenth from each grist. The box was six inches square, and the same in depth, inside measurement; which gives it a capacity of 216 cubic inches, or about half a cubic inch over an exact tenth of a bushel, or 3 and $^2/_{10}$ quarts. This quantity of mixed feed of ground corn and rye; or corn, oats, and rye or wheat bran; will weigh about 4½ lbs. This makes a very fair allowance for one feed for a horse or ox, or for the daily ration of a cow in milk, or for two dry cows, or for two yearlings, or four calves, or the same number of sheep. This measure is not only a convenient size for daily use, but allows of very accurate calculation; the quantity fed each day may be gauged by it, and an account of it very easily kept.

The box should be made of some light wood a quarter of an inch thick; for ease in handling, a leather strap should be riveted near the top, as shown in the engraving, and another, but a shorter one, near the bottom upon the same side. If the thumb is placed in the upper strap, and the ends of the fingers in the lower one, the box is easily held. A small hole should be bored in the side opposite to the handles, by which to hang it upon a nail in the feed-chest or upon the wall of the feed-room. A piece of light clap-board or "siding," which is usually 6 inches wide, is a handy material of which to make a box of this kind; the handles may be made of cast-off harness straps, and should be fastened on with copper rivets and burrs.



BOX.

Hints for the Work-shop.

How to Use a File Properly, is a very important part of the education of a mechanic. Nevertheless, the file is very frequently used in such an imperfect manner, as to greatly reduce its value as a mechanical tool. The chief difficulty in using a file, is in keeping it in a perfectly horizontal position as it is moved over the work, and in maintaining an equable pressure upon the work meanwhile. Perhaps the most difficult work in filing, and that which is most frequently ill-done, is in sharpening saws. The bearing of the file upon the work, is very narrow, and unable to guide its direction, and unless the file is held very carefully, the direction varies continually, so that the saw tooth is filed

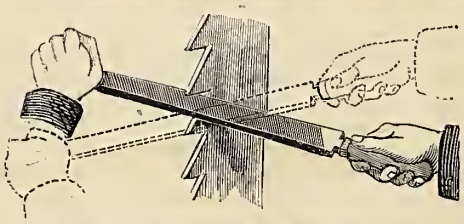


Fig. 1.—IMPROPER USE OF THE FILE.

rounding instead of flat, or sloping instead of horizontal, or at exact right angles with the line of the saw, as it should be in a mill-saw or a rip-saw. When the file is held as shown in fig. 1, (a very common manner of holding it), it is almost impossible to do good work upon a saw. When the file is pushed on to the tooth, the weight or pressure of the right hand is exerted upon the longer portion of

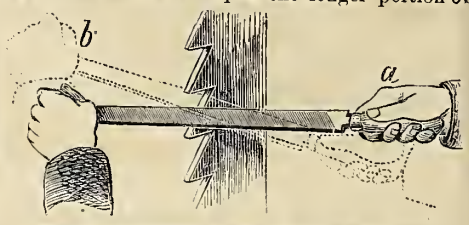


Fig. 2.—ANOTHER WRONG WAY OF FILING.

the tool, making it act as if it were the longer arm of a lever, and thus depresses that portion below the horizontal, as at *a*. When pushed forward, the pressure is then exerted upon the longer portion of the file, which is carried from the horizontal in the contrary direction. The work is thus

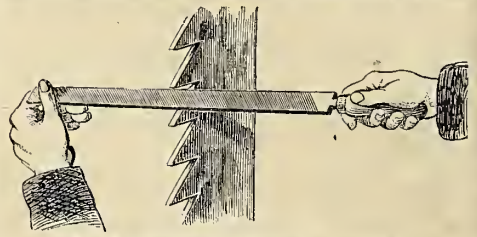


Fig. 3.—PROPER METHOD OF FILING.

made round. Or if the pressure of the left hand is guarded against, that of the right hand is seldom altogether controlled, and the work is left sloping, as at fig. 2; the position at the commencement being shown at *a*, and that at the finish of the stroke at *b*. This is a very common error with sawyers in mills, as well as with many carpenters in filing rip-saws.

To avoid either form of this error, the file should not be held with the ball of the thumb pressing

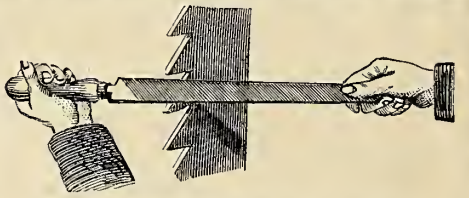


Fig. 4.—TO REST THE HAND IN FILING.

upon the handle of the file, as at figs. 1 and 2; but the end of the file should be taken lightly between the thumb and fore-finger, as at fig. 3. There is no uneven pressure in this case, and the direction of the file may easily be kept perfectly level. In filing the base of the tooth, or the under portion of any work which cannot be turned over, the end of the file should be supported upon the ends of

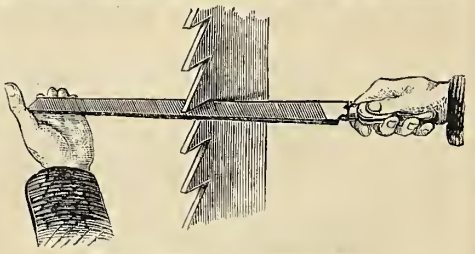


Fig. 5.—FILING UNDERNEATH.

the fingers, as at fig. 5, or be held by the end of the thumb, in an easy gentle manner. If held lightly, and not grasped too firmly, the arm or wrist will not be tired so soon as when it is held rigidly; and the motion of the file will be more even and regular.

When the arm is wearied by working in one direction, it may be rested by reversing the position of the file, taking the handle in the left hand, grasping the end between the fingers and thumb of the right hand, and drawing the file towards the body, instead of thrusting it away from it. The file is then held as in figure 4. This is an excellent position in which to hold the file when finishing off a saw tooth, or when touching it up at noon.

A Miter-box of an improved form, is shown at figure 6. The greatly increased use of moldings in

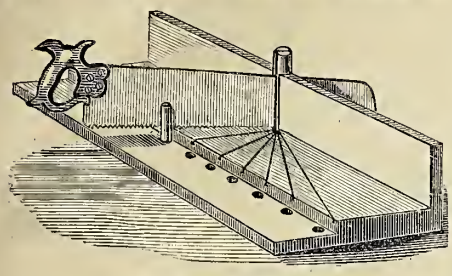


Fig. 6.—MITER-BOX.

house building, renders a miter-box very necessary in the work-shop. In the one here described, a bevel of any angle may be cut. At the rear of the box is a slotted post, which works in a socket, so

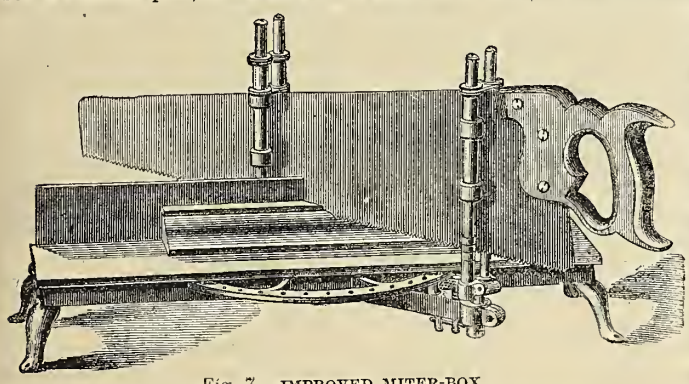


Fig. 7.—IMPROVED MITER-BOX.

that it will turn readily in any direction. From the post, lines are laid out upon the bottom at various angles. At the termination of each line is a round hole, into which a pin may be fitted. The pin is used as a guide for the saw in cutting a miter-joint, as shown in the illustration referred to. A very excellent, neat, and complete miter-box is shown at fig. 7. This is patented, but is sold at a very low price by the manufacturers. It has a frame made of a single casting, and therefore always true, in which are two sets of guides. The position of the forward guide is adjusted by a scale, to any angle, as shown in the engraving. Any ordinary saw, or even a back-saw, may be used with this box.

Fig. 8.—GIMLETS.

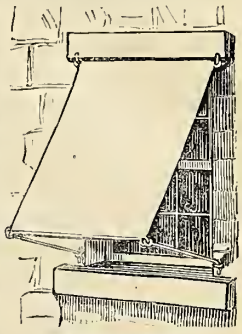
A Strong Gimlet, which is not liable to lose its handle by splitting, may be made by taking a common one, removing the wooden handle, and welding to the shank a straight cross-bar, or a loop, as shown at fig. 8. Augers may be treated in the same manner, and much improved for use.

IMPORTATION OF JERSEY CATTLE.—The Royal Jersey Agricultural Society has discovered a veritable "mare's nest," and have been seriously disconcerted thereby. A foolish statement made by one of the newspapers, which represent themselves as agricultural journals, to the effect that 3,000 Jersey cattle were annually imported into the United States, was brought to their knowledge. Without knowing how little that is published in such journals is to be depended upon, the R. J. A. S. held a meeting for the purpose of informing the "Minister of Agriculture" of the United States, how great a fraud was being perpetrated upon American breeders. We have for some time known that the breeders of the Island of Jersey have not entertained a very high opinion of the business capacity of some of the American purchasers of their cattle, but we should have supposed that they would at least have given them credit for knowing more than to expect to procure every year 3,000 cattle, worth the cost of importing, out of their small domain. The truth is, not one-tenth of this number is imported yearly, and if we consider the fact that we can show better Jerseys of American breeding, than any that have been imported of late, we shall hereafter import less, if we do not in time export cattle to Jersey to improve the original stock.

CHEAPER WAGES.—In the arrangement for next year's work now in order, farmers should insist upon cheaper labor. While almost every commodity used in the family has fallen back to ante-war prices, there has been very little reduction in the price of farm labor. This result of high wages has been, that a great many farmers have not only reduced the number of their help, but have dismissed them altogether, and cultivate only so much land as they can take care of themselves. One cause of this high price of help on the farm in the New England States at least, has been the demand for labor in factories. There has been a reduction of wages in the factories now, and among mechanics, and it is time we had cheaper labor on the farm. Statistics show that our farms are not supplying the increasing demands of our cities and large towns. With cheaper labor we can do this. Many of the tramps were once industrious workers, and can still be made useful. We want to see the farms once more worked up to their fullest capacities, and the production sufficiently increased to meet the demands of the home markets.

Screen for Dairy Windows.

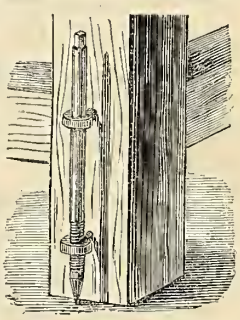
A dairy should, if possible, be lighted by a window with a north aspect. Bright sunlight upon the milk pans is injurious to the color of the butter, as is also perfect darkness. A subdued diffused light is preferable. Besides, the temperature of the dairy is rapidly increased by the sun's rays in the summer time, and the quality of the butter will be damaged by their admission. But sometimes it is impossible to so place the dairy that a north window can be secured, then a window-screen should be used. Two yards of yard-wide "Atlantic A," or "Pepperell R," brown sheeting, costing about 11 or 12 cents a yard, will make a screen for a window of more than usual size. The ends should be hemmed over a strong cord, leaving a loop or ring at each end of the cord. A hook is fixed at each upper corner of the window frame, upon which the loop or rings may be fastened by means of a light pole, with a short wire crotch or fork at the top. On each side of the window sill a screw eye should be fastened, to which the bottom of the screen may be tied by the ends of the cord. Or if it is thought preferable to have the screen not tied closely, but held away from the window a few inches for the admission of air, a short strong wire or wooden rod may be fixed to each lower corner of the screen, which may be hooked into the screw eyes in the sill. A light stretcher of wood should be fitted across the lower part of the screen, to keep it extended, as shown in the illustration. Window screens of this kind will be found very desirable for the kitchen or dining room, as they will admit a plenty of light and air, and permit an outlook. Although there will not be any present use for these screens, they can be made now while there is leisure for such work, lest when the necessity for them arrives, they may not be on hand, and no time can be spared to prepare them.



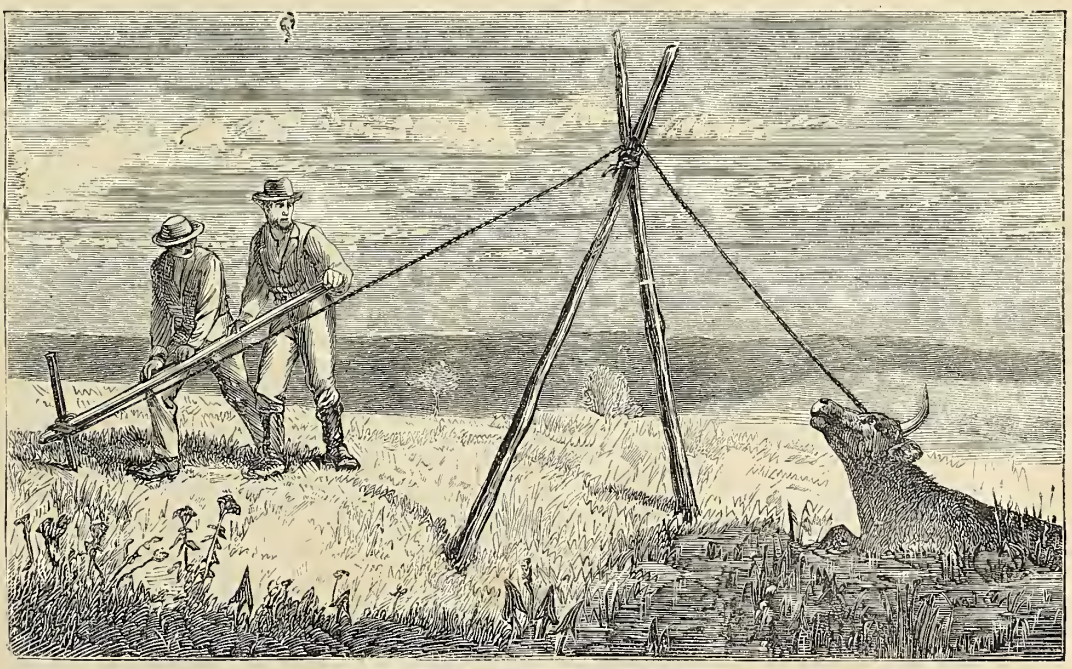
WINDOW-SHADE.

To Steady Portable Mills.

Newton Reed, of Dutchess Co., N. Y., sends a description and sketch of a contrivance for steadying portable mills, which he has used for several years. It is an iron rod of suitable size, about a foot long, fastened by iron brackets to the leg, or post of the mill. Three or four inches of the rod is a screw, and fits one of the brackets through which it runs, and can be turned up or down. The lower end of the rod is pointed, and the upper end squared, that it may be turned with a wrench. The rod is fastened firmly to the side of the post, (one on each of the forward posts), and turned down so that the point shall enter the floor sufficiently to



LEG OF MILL.



EXTRICATING A MIRED COW.—(*See page* 19.)

hold the mill from creeping while in operation. It has this advantage, that on an uneven barn floor, the steadiness of the mill may be secured by turning down the rods to suit the floor, and thus raising that end of the mill when necessary.

The Use of Artificial Fertilizers.

There is no doubt that we too much neglect the use of artificial fertilizers. It requires considerable faith, it must be admitted, for a farmer to commit his seed to the ground, helped only by a mere handful of what he has hitherto known perhaps as a drug, useful as a material for manufacturing gunpowder, or as a medicine, and look for a profitable crop in return. It has been the custom to consider bulk as an important element in manuring, and several cords or numerous wagon-loads of manure per acre as being only a moderate supply. To depend upon a few hundred pounds of artificial fertilizers to the acre is too great an innovation to become immediately popular. Nevertheless, we believe that the practice of using chemical fertilizers will soon become very prevalent. Farmers in other countries use hundreds and thousands of tons yearly of these fertilizers with profit. In fact, if the supply were to be suddenly cut off, it would cause much distress amongst European farmers, and ruin thousands of them. A not uncommon case is one of a Scotch farmer who applied 100 tons of guano in one year upon a 600-acre farm.

The use of artificial fertilizers can only grow slowly, because it is altogether a matter of experiment, and a farmer dare not try extensive experiments when failure would be ruinous. But careful trials, from which much may be learned, are being made more extensively every year. One very notable experiment in growing corn was made last season by Dr. E. L. Sturtevant, of Massachusetts, which may serve as an example for many similar trials next season; we learn that a number of farmers in Dr. S.'s neighborhood, who watched his proceedings last year very closely, are prepared to follow his method to a large extent the coming season. The experiments were made under the supervision of the Essex County (Mass.) Agricultural Society, and the results were verified by a committee appointed for that purpose. The statements are therefore entirely trustworthy. A field of 8 acres of gravelly loam was chosen. It had been in sod since 1872, and the previous crop of hay was but half a ton to the acre. The sod was plowed in May last, 7 inches deep, then harrowed, and three-eighths of the mixed fertilizer spread broadcast. The land was then marked both ways, in rows 38 inches apart, and over the places where the rows crossed each other, the remaining five-eighths of the fertilizer was scattered upon the surface. The fertilizer consisted of 199 lbs. of superphosphate of lime, 404 lbs. of sulphate of ammonia, 151 lbs. of muriate of potash, and 110 lbs. of sulphate of potash, per acre. This mixture (which according to modern nomenclature consisted of a calcium phosphate, ammonium sulphate, potassium chloride, and potassium sulphate) was calculated to supply the quantity of nitrogen, potash, and phosphoric acid for a crop of 65 bushels of corn per acre. The corn was planted the last of May, and grew slowly but healthily, and on August 8th the fodder was so luxuriant as to cause fears that the yield of grain would be light. The crop was cut on the 17th of Sept. The expenditure per acre up to this time was as follows:

For fertilizers	$27 46
Labor	12 67
Seed	30
Husking at 10 cents per bushel	8 25
Hauling to the barn	7 20
Total cost per acre	$55 88

The yield as measured and reported by the committee, was 165 bushels of ears, equal to 82½ bushels of shelled corn, per acre. There were 4 tons 240 lbs. of fodder per acre, valued at $8 per ton, equal to $33, which deducted from the cost, left $22.88 as the cost of the 82½ bushels of corn, or 27¾ cents per bushel. Two strips through the field were left without any fertilizer. The produce from these strips was equal to $21\frac{8}{10}$ bushels per acre. This represents the natural yield of the land, and leaves the balance, or $60\frac{7}{10}$ bushels as the yield or effect of the fertilizers. This $60\frac{7}{10}$ bushels of corn therefore cost a sum equal to the cost of the fertilizers used, and the cost of harvesting, husking, and handling. As a comparison between the effects of this artificial fertilizer and good barnyard manure, another experiment was made. A field was plowed in May, harrowed and manured with 5½ cords, or 12 two-horse wagon loads of 50 bushels each per acre, of almost clear cow-dung, and planted with corn in hills 38 inches apart. The total cost of the crop was $62.06 per acre. The yield was 5 tons of fodder worth $40, and 100 bushels of shelled corn, (measured by the committee), per acre. The corn thus cost 22 cents per bushel. A portion of the field left unmanured yielded at the rate of 68¾ bushels of corn per acre, leaving the balance of 31¼ bushels per acre as due to the effect of the manure. But as there would be a large portion of the value of the manure still left in the soil, an equivalent reduction should be made in the cost of this latter crop, which would considerably lessen the cost of the corn per bushel. The experiment with the artificial fertilizers is very suggestive. The short supply of manure is the greatest source of trouble amongst farmers. If the present inadequate supply can be profitably helped out by artificial fertilizers, and the means of purchasing and the skill to properly use them are available, there will be no longer any reason to complain of a deficiency of manure.

Curing Hams and Pork.

"G. W. D.," Ocean Co., New Jersey, writes: "When a slice from a ham has to be par-boiled, or soaked over night, it was not properly cured; this treatment makes it dry and hard, and deprives it of all its flavor. I have had many years experience in curing large quantities of hams, and have had the reputation of knowing "how to do it." For 100 pounds of meat take 7 lbs. ground rock salt; 5 lbs. clean brown sugar; 2 oz. pure salt petre; ½ oz. pearl ash or saleratus, and 4 gallons pure soft water. Put all in a proper vessel over the fire, and before it comes to a boil, commence skimming, and continue until all impurities have risen to the surface; when done properly, the pickle will be perfectly clear and pure. If a potato or an egg will float in it, it is all right, if not add more salt.

Hams should be left undisturbed for 3 or 4 days after killing—hung up in an airy place.

Now take one gallon of sweet molasses, 2 oz. salt petre, and 4 quarts fine ground salt, thoroughly mix them, and with a wooden paddle cover the hams, skin and flesh side alike. Lay them skin down for 3 or 4 days, and not touching each other, if it can be avoided. At the end of this time they will be ready for the pickle. Put in the bottom of a good sweet barrel, a layer of rock salt, half to three-quarters of an inch deep, pack the hams closely, cover with pickle, and weight down. Serve pork in the same way, but put a sprinkling of salt between the layers. Hams weighing 10 to 14 lbs., should remain in pickle about 5 weeks, those from 15 to 20 lbs., 6 or 7 weeks.

In smoking use corn-cobs, hickory, maple or beech. Now take marlin, or tarred rope yarn, tie one piece around the shank, another around the thick part, and passing still another lengthwise, looping to each. Make a loop to hang up by with shank down—this prevents cracking in a great degree, and retains the juices inside the skin. I need hardly say that no heated smoke should reach the hams. I believe this rock salt possesses preservative qualities not found in common sea salt. It costs about 30 cents per bushel. [This last statement would be better expressed by saying that sea salt contains substances which rock-salt does not.—ED.]

THE END OF OLEO-MARGARINE.—From the first appearance in this country of the material intended to be sold as butter, and to be used to adulterate cheese, known as oleo-margarine, the *American Agriculturist* has cautioned its readers against either entering into the manufacture of the stuff, or using it in any manner in adulterating dairy products. We took this course, feeling certain that a manufacture which could not bear the stamp of its true character upon its face, could not be honest, nor could it in the end be profitable. Our warnings are justified by the result which now appears in the shape of suits, judgments, and executions, against the "Oleo-margarine Manufacturing Company," in the New York Marine Court, for wages due to the employees, and for money loaned. The company being without assets, judgments have been obtained against the stockholders individually, amongst whom we regret to see the names of persons whose reputations helped to give life to the concern, and who now are called upon to pay their share of its funeral. This company commenced operations in October, 1873, and in December of that year the *American Agriculturist* first called attention to the objectionable character of its product. Since then the *American Grocer* and the *Boston Cultivator* have joined in opposition to it, but some other journals have supported it. Strangely enough the most active of these have been closely identified with the dairy interest. It is unfortunate for this interest that it should have been so misrepresented, for the failure at least shows that dairymen have very wisely let the "oleo-margarine" alone, to at least a very large extent.

IRON IN AGRICULTURE.—Every year the use of iron in the manufacture of implements, is extending. The best mowers now are made without a particle of wood about them, except the tongue and whiffletrees. But iron might be usefully employed to a greater extent than it now is, in the furniture of barn buildings and implements in every day use. Feed troughs of all kinds, racks and mangers, gutters, drains, gate posts and gates, fencing, wheelbarrows, and many other things now made of wood, would be much more durable and economical if made of iron. The cost would be more at first, but a set of iron furniture in the stables, barns, pens, and yards, would not need replacing in a lifetime.

POTATO BEETLES IN WINTER QUARTERS.—On passing through a potato stubble recently, we saw a large flock of crows very busy on the loose ground. The owner of the field had before stated that the Colorado beetles had descended upon his crop in immense numbers, but being too late to do any damage, he had not disturbed them. On examination we found a good many of the beetles lying dormant in the loose soil, and numberless places where the crows had dug up the ground. Evidently the crows were feasting upon the beetles, and it would doubtless be an excellent thing to give the crows ample opportunity to feast all they want to. As a help we would suggest a light plowing of potato ground at this season, to expose the beetles.

Plastic Instinct of Hens.

Since the philosophers and naturalists have taken more to observation, and less to speculation about animal instincts and faculties, the subject has gained in interest. For one thing it is clear that they have not the fixed and unalterable character attributed to them by the books. "Animals can learn what they did not know by instinct, and forget the instinctive knowledge which they never learned, while their instincts will often accommodate themselves to considerable changes." Mr. Spalding, in England, has done more than any one else in our days to make this clear. Mr. Romanes, in Scotland, has followed this up, in a recent No. of *Nature*, with an account of some curious experiments. To hatch duck's eggs under a common hen is a well-known practice, and successful, though the hen has to set a week longer than on her own eggs. Mr. Spalding tried to find out how the hen would take to a shortening of the process.

"Two hens became broody on the same day, and

I set them on dummies. On the third day I put two chicks a day old to one of the hens. She pecked at them once or twice, seemed rather fidgety, then took to them, called them to her, and entered on all the cares of a mother. The other hen was similarly tried, but with a very different result. She pecked at the chickens viciously, and both that day and the next stubbornly refused to have anything to do with them."

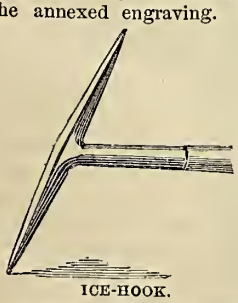
Mr. Romanes takes up the investigation, and the following accounts are condensed from his narrative. Spanish hens, it seems, will rarely set at all, but one of his "sat on dummies for three days, after which her patience was exhausted. However, she seemed to think that the self-sacrifice she had undergone merited some reward; for, on leaving the nest, she turned foster-mother to all the Spanish chickens in the yard. It is now four weeks since this adoption took place, but the mother as yet shows no signs of wishing to cast off her heterogeneous brood, notwithstanding some of her adopted chickens have grown nearly as large as herself." But the best story is told of an old Brahma hen, of much experience, to whom Mr. Romanes gave a pea-fowl's egg to hatch. This would not only require a week longer than an ordinary chick, which almost any hen gives into with a brood of ducklings, but the pea-chick has to be cared for much longer than the common chicken, and the object was to see how the instinct, or whatever it be, would deal with the peculiar state of things.

"The result was very surprising, for the enormous period of 18 months this old Brahma hen remained with her ever-growing chicken, and throughout the whole of that period she continued to pay it unremitting attention. She never laid any eggs during this lengthened period of maternal supervision, and if at any time she became accidentally separated from her charge, the distress of both mother and chicken was very great. The abnormal degree of pride which the mother showed in her wonderful chickeu was most ludicrous, but I have no space to enter into details. It may be stated, however, that both before and after the separation, the mother was in the habit of frequently combing out the top-knot of her son, she standing on a seat or other eminence of suitable height, and he bending his head forward with evident satisfaction. This fact is particularly noteworthy, because the practice of combing out the top-knot of their chickens is customary among pea-hens." Did the son teach his mother how to do it? It should be added that a repetition of the experiment the next year with another Brahma was a dead failure, for she deserted her family at the time when it is natural for ordinary hens to do so, and in consequence the brood of pea-chickens perished.

There is a queer story about some orphan young ferrets placed under a sitting Brahma hen, who took good care of them, combing out their hair with her bill just as hens generally comb out the feathers of their chickens, frequently stopping, however, "to look with one eye at the wriggling nest-full with an inquiring gaze expressive of astonishment." We share the old hen's feeling as we read the narrative.

A Convenient Ice-Hook.

A very handy ice-hook may be made as shown in the annexed engraving. The handle is firmly fastened and keyed into a socket, at the end of which are two sharply pointed spikes, one of which serves to push pieces of ice, and the other to draw them to the shore, or out of the water, to be loaded and removed. It may be made of light iron, horse-shoe bar will be heavy enough, and there is no need to have the points steeled; it will be sufficient if they are chilled, after they are sharpened, in salt and ice pounded together.



ICE-HOOK.

How to Extricate a Mired Animal.

An animal mired in a swamp gets into a worse predicament the longer it struggles. The effort to extricate it should be made in an effective manner, so that the animal may not be encouraged to exhaust itself in repeated exertions, which are useless, and only sink it deeper in the mire. The usual method is to fasten a rope around the animal's horns or neck, and while this is pulled by some of the assistants, others place rails beneath the body of the animal for the purpose of lifting it out of the hole. This plan is sometimes effective, but it often is not, and at best it is a slow, clumsy, and laborious method. The materials needed for the method here referred to are all that are required for a much better one, which is illustrated in the engraving given on page 17. This is very simple, and two men can operate it, and at a pinch, even one man alone may succeed with it. A strong stake or an iron bar is driven into the solid ground at a distance of 25 feet or more from the mired animal. Two short rails, about 9 feet long, are tied together near the ends, so that they can be spread apart in the form of a pair of shears, for hoisting. A long rope is fastened around the horns or neck of the animal, with such a knot that the loop cannot be drawn tight enough to do any injury. The rope is cast over the ends of the rails as they are set up upon the edge of the solid ground, and carried to the stake or crow-bar beyond. The end of the rope is fastened to a stout hand-spike, leaving about a foot of the end of it free. This end is laid against the bar or stake, and the other end is moved around it so that the rope is wound upon it, drawing it up and with it drawing the animal out of the mire. The rope being held up by the tied rails, tends to lift the animal and make its extrication very easy.

How to get rid of Straw.

Many farmers in "the west," and some in what we call "the east," are troubled as to what they shall do with the piles of straw which lie about their fields. Upon the same farms with these nearly useless straw piles, many head of stock are kept, and many more might be kept, which could be made useful in reducing the straw to a condition in which it would serve as manure. If the already urgent necessity for manure upon the western and southern fields were realized, there would be little hesitation in taking measures to remove the difficulty. The chief obstacle is, that these involve either personal or hired labor; the first is objectionable to many, and the second cannot be had for want of the money necessary to pay for it. The least laborious method of using this straw and making it serve the double purpose of a shelter for stock, and a fertilizer for the field upon which it has been grown, is illustrated in the engraving on next page. Some poles are set in the ground, and rails or other poles are laid upon them so as to form a sloping roof. This is made near or around the place chosen for thrashing the grain. The straw from the thrashing machine is heaped upon the rails, making a long stack, which forms three sides of a square, with the open side towards the south, and leaving a space beneath it in which cattle may be sheltered from storms. In this enclosure some rough troughs or racks may be placed, from which to feed corn. Here the cattle will feed and lie, or will lie at nights under shelter, while feeding during the day upon corn in the field. As the straw that is given them becomes trampled and mixed with the droppings, a further supply is thrown down from the stack. The accumulation may be removed and spread upon the field to be plowed in when it is so required, and the stakes pulled up and carried to another place, where they may be needed for the same purpose. Such a shelter as as this would be very serviceable for the purpose of making manure, even where straw is scarce, as in parts of the southern states. There pine boughs may be made to serve as a covering, and leaves, pine straw, dry pond muck, swamp muck, "trash" from cotton fields, corn stalks, or pea vines, and any other such materials may be gathered and thrown from time to time beneath the cattle. Cotton seed meal, straw, and coarse hay, would keep stock in excellent order, and although there may be little snow or ice during the winter months in those states, yet the animals will be very much better for even this rude but comfortable shelter. In many other places such a temporary arrangement will be found useful in saving the hauling of straw, stalks, or hay, from distant fields, and the carting of manure back again to them. It will be found vastly easier to keep a few young cattle in such a field, and go thither daily to attend to them during the winter when work is not pressing, than to haul many loads of hay or straw to the barn at harvest time, or to haul many loads of manure in the busy weeks of spring.

Keeping Apples.

As the crop is short, and prices have ruled high, it is all the more important to preserve apples in the best condition. The main element of success is a low and uniform temperature, just above freezing. The house cellar is the farmer's fruit-room in winter, and if properly managed, answers the purpose very perfectly. But there is a great deal of carelessness in guarding cellars against extreme zero nights, and the apples and vegetables are frequently frozen before the owner suspects any danger. Banking the under-pinning with a thick mat of leaves, straw, old hay, or evergreen boughs, will keep out the frost. These are within reach of every farmer, and are easily kept in place with boards or poles. But some cellars are very moist, and the temperature is likely to be too high rather than too low. This can be remedied by having a window that can be shut or opened at pleasure. By consulting a thermometer, which costs but a trifle, it is quite easy to keep the temperature in the cellar between 32 and 40 degrees, which is even enough for all practical purposes. The apples keep better in barrels, or in small tight packages, than in open piles or shelves, because they do not feel the changes so soon. For the same reason some wrap each apple in paper, or pack them in sawdust or land plaster. This requires a considerable labor, but nice fresh apples in May and June are worth working for. In dry cork sawdust they keep sufficiently well without wrappers. If this is not available, dry hard-wood sawdust should be used in preference to pine or other resinous woods. These affect the odor, and sometimes the taste of the apples. If no packing is used, the barrels should be overhauled once a month, and if any decayed apples are found, they should be carefully removed. Keep the barrels headed. Look at the thermometer every night and morning. If too warm, let in more cold air, if too cold, shut the window entirely. It takes but a moment to regulate the temperature. By this simple process we have never failed to keep winter apples in good condition until spring.

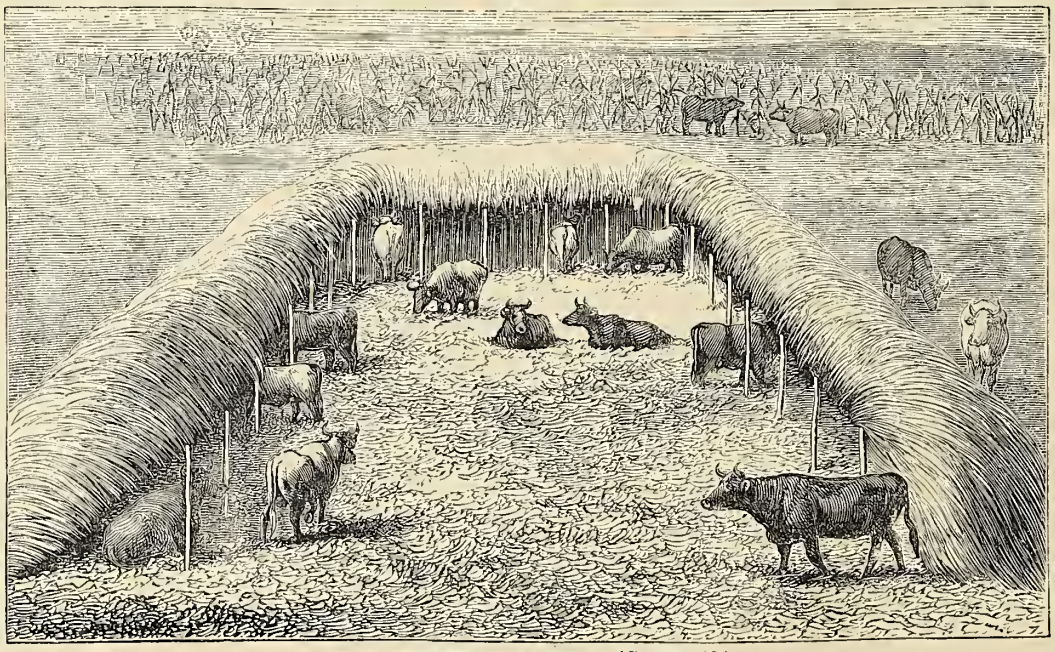
PLANTAIN.—Popular names sometimes deceive popular writers. In a late number of the Gardeners' Chronicle the place of honor as the leading article is assigned to a long story on the Travels of Plants, in which are one or two things hard to be understood—such as that "Alabama and the Gulf states are unsuitable to maize on account of their excessive warmth," and at the close, the following: "In tropical America Indians named the Plantain 'the Englishman's Foot,' a name not inappropriately bestowed, since it accompanied him to all suitable districts."—The mention of tropical America, and the account which the writer had just been giving of "the Plantain and Banana" and their dispersion, shows what he had in view. But we doubt if the edible Plantain "accompanied" the Englishman anywhere. Wherever it is, it probably preceded him. No doubt the writer had somewhere read the familiar statement, which we believe began with Jocelyn, in "The Rarities of New England," (1672), that in North America the Indians called the Wayside Plantain (*Plantago major*), "the White Man's Foot," because it springs up wherever this has trodden.

The Wire Grass of the Southern States.

We know of nothing more annoying than to come across a vegetable product of any kind, and to be unable, for the want of proper materials, to trace it to the plant which furnishes it. In commerce there are many exotic woods, the source of which is still unknown, and though Cuba bast had long been known in trade, and there were fine specimens of it in the Kew museum, it was years before Sir William Hooker could get on its track and ascertain the plant which furnishes it. With exotic products this difficulty is not to be wondered at, but it would seem that there need be no trouble in tracing up all native things of the kind to their origin. Yet we have sometimes met with no little difficulty in this. Several years ago we were in one of the southern cities, and seeing a very neat basket, inquired as to the material; all that we could learn was that the basket was woven by the negroes "up country," of some kind of grass. The owner, seeing our interest in the basket, made us a present of it, and it has been a constant source of dissatisfaction for the reason that we did not know what it was made of. In a notice of the recent Georgia State Fair, given last month, mention is made of a collection of native products exhibited by Dr. P. Stotesbury, of Clinch Co.; in looking over the collection, we came across a bundle of the very material of which our basket was woven, and learned that it was "Wire Grass." There are two plants called by this name at the north, *Elensine Indica*, a low flat-leaved introduced annual, and *Poa compressa*, with short leaves and a flattened stem, but this "wire grass" was neither of these. This as exhibited, was a bundle of cylindrical leaves as round as a wire and tapering towards the end, 18 inches or so long, and quite unlike any grass we had ever seen growing, or at the time could call to mind in herbarium specimens. Of course we endeavored to find out something about it, and the discussion concerning it brought together a number of intelligent gentlemen from different parts of the state, from whom we found that the plant was perfectly well and most favorably known, and we could learn everything about it, except its name. Some were quite sure that it never bore any flowers or seed, others thought they had seen something on it like an oat, but not one could give any satisfactory account of the only part by which it could be identified — the flower. Engaging several gentlemen to watch it next spring, and send the flowers, should any appear, we felt hopeful that we should some time find out the name of this mysterious grass. Soon after our return home, we, to our great delight, received from Dr. Stotesbury a letter containing a specimen of the Wire-grass with its flowers, and the whole matter was cleared up at once. It is *Aristida stricta*, which we had never seen growing, but of which there were in the herbarium specimens from several southern localities.

SOUTHERN WIRE GRASS.—(*Aristida stricta.*)

There are about a dozen species of *Aristida* in the Atlantic states, north and south, and many more in the far west; the structure of the flowers is very simple, and so unlike that of other grasses, as to be readily recognized. A single spikelet is shown at the lower part of the engraving; it consists of two glumes, (or empty chaff), and a single floret of two palets, which enclose the seed; the upper palet is included in the other, and not visible, but the large lower palet is terminated by three bristles, or awns, which in this species are nearly the same length, but in others vary greatly, but in all they are manifest. The northern species all grow in the most sterile soils, and are regarded as altogether worthless, the only one that has a common name being known as "Poverty Grass." The Wire-grass is a perennial, and is disposed to form large tufts, with numerous radical leaves from 12 to 18 inches long; the blade is rolled in from each edge, so that instead of being flat, as in most grasses, it is cylindrical and wire-like; an enlarged section of a leaf is shown in the engraving. The flower stalk, 2 to 3 feet high, is leafy, and bears a spike-like panicle of flowers of the character we have described; the engraving shows the plant much reduced in size, with the flower and stalk bent, to get it within bounds. This grass grows in the pine districts of Georgia and other southern states, and is not found north of Virginia; it is held in the greatest esteem as a food for cattle, and in Georgia "wire-grass beef" is boasted of as being superior to that produced in any other part of the country; it is the great reliance of stock-growers in the districts where it is abundant; like other perennial grasses, it does better for annual burning off, and this is usually burned in order to get a tender growth for the calves. This grass is regarded as valuable in sheep pastures, not so much for the food it affords the sheep directly, as for the protection it gives to more tender herbage.



STRAW SHELTER FOR CATTLE.—(*See page* 19.)

The Shrubby St. John's-Wort.

Probably almost every one who notices weeds at all, is acquainted with the common St. John's-Wort, *Hypericum perforatum*, which, though introduced from Europe, has made itself quite at home throughout most of the older states; it is a rather pleasing plant, on account of its neat habit, but while it is showing its prettily dotted leaves, and clusters of yellow flowers, it is all the while at work below ground, pushing out its roots and gaining a footing upon the soil from which it is very difficult to dispossess it. Those who have had to contend with this weed, will be surprised to learn that any of its im-

mediate relatives have any merit; the native species all have the negative merit of not intruding themselves upon cultivated grounds, and some of the shrubby ones are sufficiently desirable to be brought into the garden. There are several shrubby species, mainly in the southern states, but the one most widely distributed, *Hypericum prolificum*, is especially known as the Shrubby St. John's-Wort, and extends from New Jersey to Michigan, and Illinois, and is also very common southward. It is a much branched shrub, one to four feet high, and when not crowded forms a handsomely rounded bush, with abundant foliage of a pleasing warm green color. The leaves, one to two inches long, vary much in shape, but are mostly lance-oblong, narrowed at the base and obtuse at the apex. The bright yellow flowers are in terminal and axillary clusters, and are produced in the greatest abundance from July to September, and after the flowers have all fallen, the clusters of pods, often tinged with red, continue to be ornamental. One form of it, the dense-flowered (var. *densiflorum*), grows taller, is more branched above, and has smaller and closely crowded leaves and flowers. This, though a native of the pine-barrens, does well in the garden, and is the form from which the engraving was made. We do not consider it so pleasing a garden shrub as the ordinary wide-leaved form, which by an annual pruning may be kept only a foot high, and is well suited for the front row in clumps of shrubs. Kalm's St. John's-Wort, (*H. Kalmii*) is a very local shrubby species, found only at Niagara Falls, and a few other northern localities; it has glaucous leaves, and large flowers, with fewer in the cluster than the preceding; this is offered in some catalogues at home and abroad, but on ordering it we have in every case received the other instead. Some of the southern species are evergreens there, but we are not aware that they have been tested in northern gardens.

THE SHRUBBY ST. JOHN'S-WORT.—(*Hypericum prolificum.*)

THE CLETHRA-LIKE LOOSESTRIFE.—(*Lysimachia clethroides.*

The Clethra-like Loosestrife.

While we admit the utility of what are popularly known as "bedding-plants," *i. e.*, soft-wooded tender plants, such as geraniums, verbenas, etc., which have to be set out each spring for summer effect, we are glad to see that they are not, as at one time seemed probable, to drive all other plants from the gardens. The mania for these was at one time so strong that the good old-fashioned plants were in danger of being entirely overlooked; but now a more sensible view prevails, and it is found that each class of plants has its place, which cannot be properly filled by the other, and that we cannot well do without either. The columns of the *American Agriculturist* bear abundant evidence of the fact that we have endeavored to keep alive the love of plants for their own individual merits, and not for the color effects that may be produced by them when massed in hundreds and thousands. We have strongly advocated the claims of those plants known as herbaceous perennials, which, when once planted, keep on year after year, without demanding other care than an occasional subdivision, as being especially suited to those who love flowers, but have not much time or money to expend upon them, and while we have done this, we have endeavored at the same time to keep our readers advised as to all that was new and desirable among bedding plants, as we hold that the advocacy of either class of plants, to the neglect of the other, is not in the true interest of horticulture. In a visit to the gardens in the vicinity of Boston, a few months ago, where the bedding system is carried to greater perfection than elsewhere in the country, we were glad to see that the herbaceous perennials had also a place, and rows of gorgeous columbines, herbaceous pæonies, our favorite Japanese Astilbe, always so beautiful whether in leaf or flower, and many others, offered their attractions in their proper places, as well as did the brilliant geraniums, achyranthes, coleuses, and other bedding plants. The list of good herbaceous perennials is already a long one, yet we are always pleased when we can add to it a new plant of real merit, and it was very gratifying to come across, in one of the gardens we visited, a clump of *Lysimachia clethroides*, a new Loosestrife from Japan. The Loosestrifes are best known through the common Moneywort, (*L. nummularia*), common in gardens, and much used in hanging baskets; but this is very much unlike most of the species in habit, as it has prostrate creeping stems, and solitary flowers from the axils of the leaves. We have several wild species which are erect, one of them, the Upright Loosestrife, figured in Sept., 1871, with its flower in a long raceme at the top of the stem. This new species has a similar habit to the wild one referred to; it has a strong stem, two feet or more high, with lanceolate leaves,

and dense terminal spikes of pure white flowers, which often gracefully curve at the apex. The resemblance between the flower-spikes of this, and those of the beautiful Sweet Pepper-idge, or *Clethra*, of our swamps, suggested the specific name, *clethroides*, clethra-like for the plant. We are informed that this has one quality unusual in a herbaceous plant, *i. e.*, the leaves take on autumnal colors, and show fine tints of red and yellow, much after the manner of those of the Sugar Maple. Apparently the Loosestrife is not known in British gardens, and the few persons who have it here do not know how or when it was introduced; but it is not unlikely that the seed was accidentally brought in with other Japanese plants. A plant with the merit of this will soon find its way into general cultivation.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

FIRT ARTICLE.—CAMPANULAS, OR BELL-FLOWERS.

One of the leading horticultural papers some time ago had an article on Campanulas; in which it was asserted that there were no hybrid Campanulas, and a reason was given for it. The reason was, that these flowers are fertilized in the bud, so as to give no chance for natural crossing.

I am not sure it is true that there are no hybrids in this genus. It may be that the writer jumped to the conclusion that there are none, because "the flowers are fertilized in the bud." And I am very sure that he is mistaken about that. The account struck me, at the time, as a good case for showing how easy it is to be mistaken, even about a matter that one sees with his own eyes, and would be ready to swear to. I presume that the writer saw the thing correctly; but he did not see into it, much less through it. As I believe he is not the only horticulturist who has fallen into this same kind of mistake, as the mistake is one which a hasty observer would be almost certain to make, and as the case is a very instructive one in several respects, I think it worth while to bring out the facts by the aid of a few illustrations.

Fig. 1.

Our readers will mostly have to take this account upon trust until next summer, and then they can see for themselves, as, indeed, it is to be hoped that the younger ones will. For these Campanulas are among the commonest as well as handsomest garden flowers—not forgetting also the Blue-bells or Hare-bells of our rocky woods. Almost every garden has Canterbury Bells, and many of them two or three perennial species;—such as *Campanula persicæfolia*, (called Peach-leaved Campanula, though the foliage would never suggest to us that name), with its handsome pure white upright bells; and later in the season *C. Carpathica*, (the Carpathian Bell-flower), with blue flowers much resembling our wild Blue-bell on a larger scale, is common. Then there is the Great-flowered Campanula, now called *Platycodon* by the botanists, conspicuous for its balloon-shaped corolla in the bud, opening into a broad and flattish bell. All of these tell the same story, with a little difference in the details only. The one which our sketches were made from, is *Campanula rapunculoides*, which we have not got a good common name for, though the plant is getting to be a weed around old gardens, and escaping to the road-sides. The English botanists call it Creeping Bell-flower, on account of its running roots, but its spiry stems are bolt upright, so that this name has no sense to those who do not look below the surface. It is one of the least showy and least desirable of all the Bell-flowers; in fact, is not desirable at all, but in our gardens is a nuisance, on account of the way it has of spreading by the root, every bit of which left in the ground will grow, so that it is not easy to be rid of it when it has once taken possession.

Fig. 2.—BELL-FLOWER CUT OPEN.

Although I may presume that most of the readers of the *American Agriculturist* know a little botany, yet, to make our narative plain to all, it may not be amiss to explain what we mean by fertilization in a flower. Within the leaves or cup of a perfect flower, such as of a Campanula, are the parts answering to the two sexes, stamens and pistils; the former surrounding the latter. The engravings, which show the flower sliced lengthwise through the middle, show, in fig. 1, two of the stamens in the bud, and in fig. 2, three of them as they appear in a blossom that has been a day or two open. The stamen produces *pollen*—grains appearing like a yellow powder to the naked eye—contained in the *anther*. This in the flower-bud shows a very short stalk; in the open flower (fig. 2), this stalk, (called the *filament*), has lengthened. The *pistil*, in the center, has at bottom the *ovary*, containing numerous *ovules*, which are to be seeds; the column which surmounts it is called the *style;* and the three forks at the top of this, or more strictly, the inner or upper faces of them, are the *stigmas*. Now the upshot of the matter is, that, for the setting of seed, *i. e.*, that the ovules may have an embryo formed in them, and so become seeds, it is necessary that pollen should be placed on the stigmas. When this is done, each grain of pollen sends down into the stigma, and through the style a thread-like growth, which reaches the ovules and *fertilizes* them. Unless pollen is deposited upon the stigma, and acts in the manner described, there is no *fertilization*, and of course no seeds.

Fig. 3.

Fig. 4.

The writer of the article mentioned at the beginning—some English horticulturist, I have entirely forgotten who it was—says that Campanulas are fertilized in the flower-bud before it opens. Seemingly he had good reasons for saying so. For the five anthers shed all their pollen while still imprisoned in the unopened corolla. By the time this opens, (as seen in our section fig. 2, which shows three of them), the anthers are empty and beginning to wither. Moreover, the pollen which they contained, has been bodily deposited upon the pistil! The style, as shown in the center of fig. 1, is beset with bristly hairs, rendered sticky by a slight glutinous moisture. As the five anthers, closely surrounding it, open down the inside, and discharge their pollen, this is nearly all caught and retained by these hairs, which are loaded with pollen. (The hairy surface with pollen sticking to it is seen on the style in fig. 1; and in fig. 2 some of the pollen is still seen on the upper part of the style, close to the stigmas.) Then the corolla expands, the style lengthens below, the withering empty anthers lie loose towards the bottom of the flower; and so the work seems to be done.

Not at all! The pollen is on the *style*, and, as concerns its office, it might just as well be still in the anthers; for not a grain of it acts there to fertilize the seeds. The three forks of the top of the style are closed at first, and so they remain for a day or two after the corolla opens, completely shutting in the stigmas, which occupy only their inner face. Even these forks have their backs loaded with pollen, which is thus brought very near indeed to the place where it is wanted, but not at it; and the adage holds true, that "a miss is as good [or as bad] as a mile." With all this seeming, no "fertilization in the bud" has taken place. If that is what is intended, the thing is a manifest failure.

Indeed, from this point of view, it is difficult to see how the flower is to fertilize itself at any time. After the flower has been open a day or two, and the lower part of the style has grown considerably longer, so as to carry up higher the pollen-loaded portion, the forks at the top separate, spread out horizontally, or recurve, and expose the stigmas, as fig. 2 shows. But, whether the flower stands erect, as in some species, or nods or hangs inverted as in others, there is small chance that any of the pollen gets upon the stigmas.

What really takes place is this. When the blossoms open, they are visited by insects, especially by bees. They come perhaps for a little nectar at the bottom of the corolla, but mainly for pollen, a most nutritious material. This they gather from the style and carry away with them, passing from flower to flower. When a bee comes to a flower freshly opened, it finds abundance of pollen, in which it revels, and with which it loads itself; but the stigmas, snugly closed, get none of it. When it flies to an older flower, it comes directly against the three-rayed stigmas, outspread at the entrance, and dusts them with pollen; and so on from flower to flower. Instead of self-fertilizing, it depends upon the bees. The bee does the work on shares; and there is plenty of pollen provided for both.

There is a rarer sort of Campanula in our garden, called *Symphyandra*, which means "anthers joined together." In the flower-bud they are as in fig. 3; in the older open flowers, as in fig. 4. The corolla in both the engravings is cut away. You have only to imagine this in the form of a bell around these figures, which stand in place of the clapper. The difference between this flower with the long name and true Campanula is only this, that the anthers never separate. They open inside in the bud, and discharge their pollen upon the hairy style in the center; then this lengthens; in fig. 3 the tip of the style is seen just projecting at the top; in fig. 4 from an old flower, after brushing all the pollen out of the closed tube, it has carried it up to a convenient position for the bees; and the three stigmas have opened, ready to take what the coming bee may bring, before loading up anew from the bountiful store on the style below.

In a second article we will see how this idea is carried out, with a difference, in flowers of another family. The moral of this story is: Look twice before leaping to a conclusion.

Notes from the Pines.

Our correspondent at "The Pines" sends us full and seasonable notes, but we have only room for the following novelty in Water-Cress culture. He says: Ever since I have lived here, I have been anxious over the subject of

Water-Cress.

There is no brook on the place, and the river is not available. I have wondered if sufficient water might not be found by tapping the hill with a horizontal well, have considered cemented tanks, and various other contrivances, but those who have written, and those who profess to know, have all said in effect: "It is of no use to try to grow water-cress, unless in a running stream with a gravelly bottom." I turned from these authorities with a resolution that some time or other I would convince myself, at least, that water-cresses could be grown without "a running stream and gravelly bottom." It was one of the "things to be done" down on my mental memorandum book, and I hardly know whether I was pleased or not, on opening the last *Gardeners' Magazine*, (Eng.), to find that Shirley Hibbard had "gone and done it," and thus quite cut me out. Well, it is only another

illustration of the fact that important discoveries are rarely left to one person, and from the discovery of America, through steam navigation, telegraphs, to the use of ether in surgery, there have been several claiming to be first. On the whole, I thank S. H. for carrying out my experiment, as it allows me to publish results a year sooner. To condense the whole matter, he grows better cresses in pans and pots, than can be raised in brooks; though he has an abundance of cress growing in a brook upon his place, he prefers the pot-grown. Almost any pot or seed-pan will answer, but he prefers one he had made especially for ferns, which is 15 inches across, and 8 inches high. These he half fills with broken bricks and old mortar, or lumps of chalk, puts on a layer of moss, and over that is placed good, rich soil, no matter how coarse, and well pressed down and rounded up; on the surface

WATER-CRESSES GROWN IN POT-CULTURE.

of this, bits of rooted cress or cuttings are dibbled in, about 3 inches apart. The pot sits in a "stand," or saucer as we call it, holding 2 inches of water. The newly planted pots are kept in the shade for a few days, and then exposed to full light and air; in summer the plants give a cutting in less than three weeks after planting, and give three cuttings in succession, when the pot is replaced by another started later. This engraving is of Mr. Hibbard's 15-inch pot, which he says gives him half-a-peck of the finest possible cresses at a cutting. This may seem like very small work to those who can grow cresses by the acre, but the thousands to whom, as to myself, cress in spring is almost a necessity, and who have no brook in which to grow it, and are too far from market to buy it, will be very thankful to Mr. Hibbard for pointing out the way in which, by a little trouble, we may enjoy that which has heretofore been denied us. In England the pots in winter are protected by frames, but with us, unless in an unusual season, we could not expect much growth unless in a heated greenhouse. Those who do not know where to get cresses to start with, can begin with seeds, which are kept by the seedsmen; these may be sown in a seed-pan or box, in soil kept quite wet, and pricked out in place of the cuttings in the pots where they are to grow. Mr. Hibbard tried various experiments, such as immersing the pots at various depths, and up to the brim and over, but he claims that the crop is better with 2 or 3 inches, than any other depth of water, and that the product is vastly better than that grown in running streams. Mr. Hibbard first began pot-culture to keep a new and superior variety, the "Erfurt Sweet Cress," distinct from that in his brook. Some of our seedsmen keep the seeds of this. I see no reason why an equal success should not be had in this country, at all events I shall try, and so no doubt will many others.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Home Topics.

BY FAITH ROCHESTER.

The Coming Grandmothers.

That means you and I, who are now in the prime of life, bearing the burden and heat of the day. The years roll on more and more swiftly—or seem to accelerate their passage—and the grey hairs come, one by one at first, and afterwards by scores.

The dread of growing old seems to me as unreasonable as the common fear of death. One does not like the prospect of becoming a burden to ones' friends, but can not we prevent such a calamity by proper foresight and self discipline in these earlier years? Persons who honestly suppose that childhood is the "happiest stage of life," have little idea of the real value of life as a school, where most excellent lessons are to be had by all teachable souls. Such ones like to get *experience*, and it seems likely that coming years will not fail of yielding that, as past years have already done. When fresh lessons are set us in this great school of life, we often fail to see them in that light, and call them troubles and afflictions. I have great contempt for my own weakness in that respect. I should think I had had lessons enough already, to begin to coöperate more cheerfully with the Great Teacher in the work of my own education; but I still shrink from my tasks, and forget how the great fact of Immortality throws all these light afflictions, which are but for a day, into insignificance.

How to get the *best* of these ever-present experiences, so that we may grow stronger and sweeter in spirit, as years go by—more coöperation with the Infinite Goodness, which underlies and works through all things for the ultimate good of the whole—that is the present and unceasing problem.

Just now, with most of us mothers, the way is marked out. Each day is full of duties crowding thick and fast upon each other. For many of us the way seems very straight and narrow. But by-and-by our babies will be busy out in the world. One by one they will fly away from the home nest, and *perhaps* there will then be some leisure—a little afternoon of life, when what work we do may be done from choice rather than from necessity. Then what?—Snuff-boxes and knitting work?—The former have pretty much gone out of use already, and when we have become grandmothers, will scarcely be known, great comforts as they were to the grandmothers a few generations ago. The knitting work of the dear grandmothers must not be scornfully mentioned, so greatly does it add to the comfort of thousands of families; and if machinery has not taken this work out of reasonable reach, by the time that my own grandchildren arrive on this planet, I, for one, shall cheerfully do my grandmotherly share of the family knitting. Just so of all the little helpful tasks that good grandmothers are wont to perform. There seems to me something almost angelic in the sweet patience and sympathetic assistance one sometimes finds in aged women. They seem to have ripened properly into human beings, and it delights me when such old women tell me, as some of them do, that their last days are their best days. It ought to be so. They may be mere children still, in scientific and literary attainments, and though this does not add to the charm of character, neither does it detract therefrom. It grows on me more and more forcibly, that St. Paul was right in his beautiful epistle in which we are taught: better than all knowledge, or doing of great deeds, are faith, hope, and charity—"And the greatest of these is charity."—A good loving heart greatly outweighs what we call knowledge. If to the loving womanly heart be added mental power and culture, then we have "A perfect woman nobly planned."

I fear this seems like preaching, and I must "draw to a close." This then, briefly, is the thought I wished to communicate: our seed time for our coming grandmotherhood—if we already have children—for our old age in any case—is not yet past. By regular and temperate habits, we may preserve or improve our health, so that we may be able to take care of ourselves, and perhaps help others in some way, when we are old.

A Variety of Meat for Farmers' Tables.

Farmers who live near a good market have no difficulty, outside the state of the family purse, in securing some variety in the meat of their tables. But many farmers can not avail themselves of the regular butcher's wares. In most cases they either depend too much upon salt pork, or use too little meat. To go without meat entirely, one needs a generous variety of grains, vegetables, and fruits. Those who live mainly upon bolted flour, potatoes, and tea and coffee, suffer a kind of slow starvation, which tells at last seriously upon the health. Very likely they over-eat, and so derange the liver, and set the whole physical system out of order. They over-eat in the instinctive endeavor to secure from inadequate materials, the elements demanded by their bodies to maintain strength, and repair the daily waste. If even our farm animals require a variety of food, or a combination of different foods, in order to get the best of each and all kinds—as Prof. Atwater teaches the readers of the *American Agriculturist*—it is quite reasonable to suppose that human beings need a variety also. All experience teaches that men thrive best on a varied diet. Women especially suffer from the narrow range of food materials often supplied for winter consumption, since their in-door life affords less aid to digestion, and creates a feebler and daintier appetite than out-door workers enjoy. There is a good deal of excuse for their ill-health, in the meager supply of good and palatable nourishment found in their every day fare.

I am not at all sure that meat is a necessity, even for laborers. But if families who have lost faith in pork, merely leave that out from their bill of fare, and go on living in other respects in the old-fashioned ways on bolted flour bread and pastry, and a few varieties of vegetables, with a small supply of fruit, the change may possibly be for the worse rather than for the better. I have lived long at a time where it was very difficult to get fresh meat, or meat of any kind, and no one seemed to feel its lack if we had plenty of good graham, oat-meal, and corn-meal, with beans and peas for soup. But if we are confined mostly to fine flour and potatoes, a craving for meat is sure to follow.

Salted meat is always inferior to fresh meat, except as affording variety, but it possesses considerable value as food if properly freshened and softened by long and slow cooking. Dried beef, though still less nutritive than corned beef, is a fine thing to have in the house, as an appetizer

when well pickled and dried and shaved in very thin chips, and better still when soaked and cooked with cream gravy. By proper care one can have these all the year round. For winter use, beef

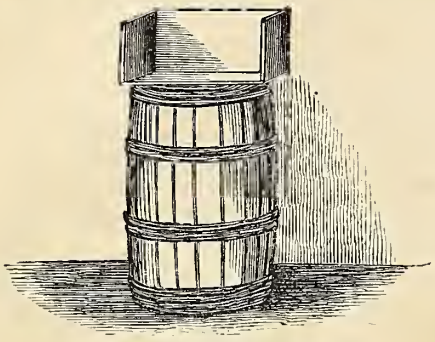


Fig. 1.—FRAME OF WASH-STAND.

preserved in a frozen state is still better, and almost as good as absolutely fresh meat. It may be packed in snow or, (better), in well drained ice, or, (better still), it may be frozen in pieces suitable for use, wrapped in clean brown paper, each piece separately, and packed in chaff, bran, or hay, in a cold place, so as to remain frozen until late in the spring. In the use of an ice-house I have had no experience. Other meat than beef can be preserved in the same way. Barrels or boxes of poultry or wild game may be kept frozen, in a fresh state, for winter use. It is said to be best to put a bit of charcoal in the cavity of each dressed fowl, with lumps here and there between them, as they are packed. Charcoal will remove all offensive smell or flavor from meat already somewhat tainted from too long exposure to the warm air. Fresh fish can be kept frozen very easily, for winter use. When you wish to use a fish, you can shave the outside clean with a sharp knife, and then thaw it by putting it in *cold* water for a little while. In thawing the fish, fowl, or piece of frozen meat in cold water, (for this is the proper way to thaw all meat), a crust of ice will be formed upon the surface, and you can either peel this off or wait for it to melt off in the water. Fish and fowls of various kinds can be kept in brine, (each class by itself), for use at any time of year. But persons who live near a river or lake where fish abound, can catch fresh fish at most any time in winter, or purchase of the fishermen who take them through the ice holes with spears. Those who keep poultry can kill and dress it as they need it, though it may be economy to freeze and pack in the fall a quantity for winter use.

Women's Under-Garments.

I still receive repeated inquiries in regard to women's sensible under-clothes. It does not seem to me necessary to send *anywhere* for patterns. The idea is very plain. Make a long-sleeved, high-necked, easy-fitting waist, with buttons around the bottom. Gore this over the hips, and put on two or three rows of buttons if you like, one row for the drawers and one for skirt; another row, the middle one, for "dress drawers," if you use them. The remainder of the combination garment, (a combination of waist and drawers, which together make a complete and comfortable under-suit), con-

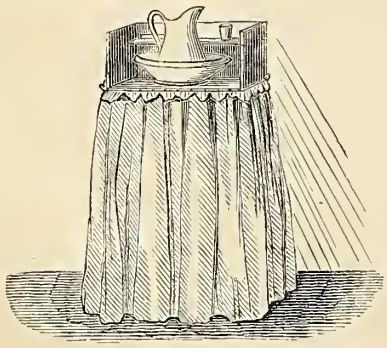


Fig. 2.—WASH-STAND COMPLETE.

sists of drawers which may be cut like any garment of the kind, of cotton for summer use, open in the usual way, and so high in the back as to admit of leaning far over without bursting the buttons from the back of the waist; or they may be made for winter long and close at the ankle, left open at the bottom for a few inches to admit of their lapping smoothly under the stockings. There is room for individual taste and preference in several respects, as whether the waist and drawers shall be permanently united or buttoned together, (I prefer the latter for my children and myself), whether the waist shall be made close-fitting or more like a sack, and whether the drawers shall be closed or not.

I think that any woman who has sense enough to cut her own ordinary clothing, can cut and make these new-fangled garments without any patterns whatever, except her old dress-waist and drawers patterns. If she has a well-formed bust, she will do well to cut out a place in the front and set in a gathered strip which will give looseness and ease. Care must be had that every part is sufficiently loose for comfort and health, big arm-holes, loose bands, and room in all directions for bending the body. For winter many still prefer to buy merino under-suits—vests and drawers. These can be improved variously. One improvement is to cut out the senseless breast "pockets," and in their place insert a strip fulled a little at both edges, made of the best part of some old under-suit or merino stocking legs. Another improvement is the cutting off of the vest or jacket at the waist line, (and the cut-off portion will answer for breast strip and patches), finishing it with a loose band with six or eight buttons, to which the merino drawers are buttoned. Over this some wear another suit, (waist and drawers), of flannel or ladies' cloth. I make these outer drawers with a lining, and for general use I know of nothing better for the drawers than the lighter shades of water-proof cloth. These are called by some "dress drawers," and are sometimes only used for out-door wear. I value them more than any skirt for steady comfort on winter days, in-door or out. It is well to cut them gored at the bottom, three or four "darts," so to speak, (or "biases," as I think some would call them), little short gores anyhow—so as to make them fit around the stocking inside the top of the laced boot, and if they are long enough so that they do not pull away from the boot in walking, they will hang over a little at the bottoms, as though gathered and fastened with a band.

Home-Made Furniture.

Many a housekeeper has a room that is not used often enough to warrant the expense of furnishing.

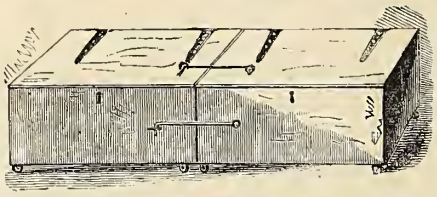


Fig. 3.—THE BOXES.

She would fit it up for a visitor—or it may be a boarder, but for the question of furniture; such rooms can be fitted with all the essentials, except the bed-stead, at a very small cost, and young people who go to house-keeping on small means may, by the exercise of a little skill, make their modest sum set apart for their outfit, go much further than if it were all expended at the cabinet-makers. We have now and then published hints in this direction, and we give here two more useful articles which any one of ordinary tact, may make. The first is a wash-stand; the engravings show it undressed and dressed. The frame-work is a barrel and a box. Nail the hoops upon the barrel so that it may not get rickety; the box should be large enough for its edges to project beyond the swell of the barrel all around, about 20 by 24 inches is a convenient size; the box is without top, and has one side removed; all the other parts should be firmly nailed; it is then nailed securely to the barrel, as in fig. 1. It is then to be draped, as in fig. 2, with such material as may be at hand; if new stuff is to be bought, an inexpensive light chintz will answer; this should be tacked on in plaits, to give a full appearance; or some light blue or pink paper muslin may be used, and some open material, like curtain lace, or even mosquito netting, tacked

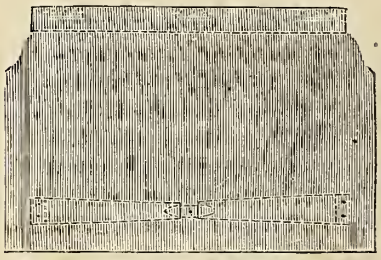


Fig. 4.—TABLE AND BACK OF LOUNGE.

over it in folds; an old dress may come into play for the drapery, or other material that may be at hand. The box portion, if it is to be used much, had better be covered with enamelled cloth at least for the inside of this part, which can be wiped off as occasion requires, or the box may be covered with the same material as the rest, and some simple tidy thrown over it to catch the spatters.... The second article combines in one a bed, a lounge, two ottomans, a table, and two chests, and will be very useful to those who have to make the most of a little

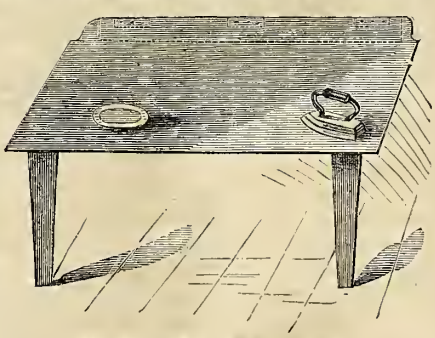


Fig. 5.—THE TABLE IN USE.

room. The starting point is two good, strong, well made boxes, the size of which will depend upon the use to be made of the affair. If to be used for a bed, they must be wider than if for a sofa alone, probably 2 feet is the least possible width, and 30 inches be still better; the length of the two together should be at least 6 feet. These boxes should be provided with well hinged lids, with easters, by which they may be readily moved, and three hooks, one at top, back, and front, by which the two boxes may be securely fastened together, as shown in fig. 3. The back to this sofa is arranged "a double debt to pay." It is made very much like the ironing table figured in August last; it is hinged at the top to a cleat, and has legs to support it when used as a table, (fig. 5), and when not so used the legs are folded under, as shown by the dotted lines in fig. 4, and the whole hangs nearly down to the floor, to serve as a back to the lounge. These are the foundation; for a covering, the back is provided with a quilted chintz cover, which is fastened in place by means of rings which hook over brass-headed nails in the cleat. The boxes are draped separately with the chintz in folds, and covered with a thin hair mattress, made

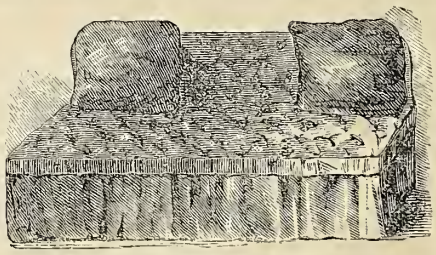


Fig. 6.—THE LOUNGE AS FINISHED.

in two parts, and covered with chintz, with a wide fluted ruffle all around the edge. Two large pillows, with ruffled cases of the same material, make the affair complete, as shown in fig. 6, and a very com-

fortable lounge it is. If used as a bed, the bedding may be kept in one of the boxes, while the other will come in play as a stow-away-place for various articles. When the table is to be used, the lounge part is rolled away, and it is found very convenient to have this part separable into two, as the halves are more readily put out of the way than the whole would be. "None of these makeshifts for me," Mrs. Broadlands will say, "give me the real stuff, and solid, whether it is black walnut or mahogany. If I should put a visitor into a room with such a wash-stand as that, what would they think?"—We answer Mrs. B. that the difference in cost between makeshifts and the "real stuff" will buy all the books the family will need for a year; will send the oldest boy or girl to the academy, or may be used in many other ways. As to what visitors think; if we have any who do not think all the more of us for our economical ways, we hope they will not come again, but go where they can come in contact with more congenial furniture.

Household Notes and Queries.

VINEGAR.—The inquiries about vinegar come frequently; they generally ask how to make good vinegar in the family, but sometimes how to make vinegar from tomatoes, rhubarb, and the like. We do not know anything about these unusual kinds of vinegar, nor do we care to make their acquaintance. Vinegar can be made out of any liquid that contains alcohol, or sugar, or other matters that may be converted into alcohol, and there can be, at least so far as the ordinary manufacture is concerned, no vinegar without first producing alcohol. We think that good family vinegar can be made from but two substances, wine and cider. Wine being for the most part out of the question, cider is the only available material for *good* vinegar. We admit that just as strong, and just as wholesome vinegar may be made from sugar or molasses and water, but it will not have the peculiar refreshing fragrance of that made from cider. The cost of cider-vinegar is greater than that of its substitutes, but is of no consequence when the superiority of the article is concerned. It is not the mere acidity that we want, but the acidity qualified by an aroma, only to be found in that made from cider. Cider or any similar liquid to be converted into vinegar, needs a high temperature, at least 70 degrees, and free exposure to the air. If the temperature is lower, the operation will be slower. To start the vinegar, some ferment is needed, and for this some old vinegar, or the "mother" from an old barrel is useful. If one has an old vinegar cask with some vinegar left in it, the better way is to add cider to it gradually, a gallon or two at a time. To convert new cider into vinegar it is best to have two barrels, each half full, and draw each day a pailful from one and pour it slowly into the other, thus exposing it as much as possible to the air. Unless the proper temperature can be commanded, there is no way of hurrying the process.

CLEANING TRIPE.—Mrs. M. A. S., says that tripe is cleaned more easily with lime than by any other method. One quart of air-slaked lime is sufficient for a stomach; this is sprinkled very evenly over the stomach, and in about 15 minutes the coating will scrape off easily; she puts the tripe into warm water before scraping.

SENDING RECIPES.—Some seem to set a high value upon their recipes; we find on looking over our file that one person sends three very ordinary recipes, and wishes us to forward their value in money, and another encloses a single recipe of a few lines for which the paper for the year is asked. We always have on hand more recipes than we can ever expect to publish, and do not wish to purchase any. We are glad to say that the vast majority having received freely, are happy to give freely, and contribute to the general fund without any other recompense than what may come from the feeling that they have helped other housekeepers.

BOYS & GIRLS' COLUMNS.

Fishing in Winter.

Some people go a fishing for the sake of *fishing*, while others go for the sake of the fish. Some young men are never fishermen, but "anglers"; they make their appearance in remarkable rig from boots to cap, and their bag, rod, reel, and all other outfit cost as much as a good mowing machine; they will be out all a long summer's day, and be quite satisfied with one or two little trout; they do not go for fish, but for the fishing. Those who try fishing in winter are very likely to care more for fish than for sport, for while there is a certain excitement about it, there is also a good share of what is very much like work, with the addition of cold fingers and toes. In many parts of the country large quantities of fish are caught through the ice, both by those who send them to market, and those who catch them for family use. Some of these ways of fishing are practised by boys, especially the one to be named last. There is danger attending fishing through the ice, as there is in going upon the ice for skating, or any other purpose, and it would be much better for boys to go with older persons, or at least not undertake fishing in this way unless their parents feel that they are old enough to take proper care of themselves and avoid danger. One method sometimes practised, is stunning the fish, but this can not be done unless the ice is very clear and not too thick; for this the fisherman requires only an axe; he goes along cautiously, and when he sees a large pickerel or other fish near the surface—for they are fond of coming up to the sun-light—he gradually approaches it, until he can strike the ice a heavy blow directly over the fish. The force of the blow is communicated to the water, and the fish is stunned and motionless; a hole is then cut and the fish taken out. The work must be done quickly, or the fish may recover and get out of reach....Spearing is a very common way of taking fish through the ice, and in some cases requires much skill; a fish or other object in the water is not exactly where it appears to be; very likely some of you have seen in your school-books something about the refraction of light, and that the rays of light are bent in going from the air into the water, or from the water into the air; you know that an oar or straight pole put slantingly in the water looks as if it were bent; we can't

Fig. 1.—STUNNING FISH THROUGH THE ICE.

Fig. 2.—SPEARING FISH IN WINTER.

Fig. 3.—CATCHING SMALL FISH WITH NET.

Fig. 4.—TIP-UP OR TILT-UP FISHING.

stop to describe this now, but the light which enables you to see the fish is bent in coming out of the water, and if the spear were thrust at the fish just where it appears to be, you would miss it; those who spear have to learn by practice how to allow for this refraction. Eels are caught in large quantities by spearing through the ice; but it is not necessary to see these; indeed, they are quite hidden in the mud, where they stay in winter. The fishermen cut holes in the ice and thrust the spear down into the mud in different places, until they feel that they have an eel between the long elastic prongs, and they often get several at once in this way... In the third engraving is shown the method of catching small fish with a net; this is a moderately fine net attached to a hoop, and is let down through a hole in the ice; when a number of small fishes are directly over it, the net is lifted; these small fry are caught to use as bait for the next ..."Tip-up," or "tilt-up" fishing, as it is called in different places, has more sport about it than either of the others, and one person can attend to several lines. The tip-ups have to be got ready first; they are made of thin board, about two inches wide and 20 inches long, with a hole bored two or three inches from one end; to the short end, or that nearest the hole, a line is fastened of the proper length for the depth of the water, or kind of fish, and at the other end of the line is one or several baited hooks. Holes are cut in the ice, and a stick long enough to reach across there is put through the hole in each tip-up; the line is dropped into the water, the stick resting across the hole. When a fish takes the bait, the long end of the tip-up will be tilted up, and the fisherman knows that he must attend to that line; when there are several tip-ups, and the fish bite freely, it makes pretty lively work if one has many to look out for.

No. 447.—Geographical Rebus.—Here is a grand chance for those who like to make out rebuses—for there are no less than 20 in this one. In fact, it is 20 different rebuses, and if you look sharp, you will find the names of that number of countries, states, cities, and other geographical localities.

The Story of "General."

It was a warm day in May, and the West children were all making mud-cakes in the old quarry back of the house, with shingles for bread-boards, and blacking-box covers for "cutters." There were Alice and Janie, Frank and Joe, and little Bob White, their cousin. What works of art were achieved, and how dirty certain little hands grew in the process, nobody knew but themselves and the wash-basin. The first batch of cakes had been laid on the rocks to dry, and the children were all standing around to admire, when Horace White came rushing up the hill, waving his hat, and calling at the top of his voice: "The dog's come! the dog's come!"

In less than a minute the quarry was deserted by all but the mud-cakes, while the children ran toward the house, little Bob White behind, and doing his best to keep up.

Payson West stood on the kitchen-stoop, with something in his arms; a small, black, fat, wriggling thing, a thing with blinking purple eyes, a white nose, and a short, convulsively wagging tail.

"Oh, the darling little thing."

"How old is he?"

"Let me have him!" cried the children, throwing themselves on their elder brother in a body.

"No! no! he mustn't be handled, it spoils him. Keep off now—all of you—and I'll put him down," said Payson.

Everybody retreated a little, as Payson set the puppy down on the gravelled road. Puppy was fat, very fat, and his legs were short, and not very steady. So, after a few tottering steps, he sat down suddenly, sniffed at the road, and then raised his head, and gave a pitiful little howl, which said, as plainly as Bob himself could have said it, "I want my mother!"

"He's hungry," said Alice, "let's get him some milk."

At which the children all rushed into the kitchen. Now I never before knew that a pint of milk was too heavy for one person to carry, yet this particular pint-bowlful required the united efforts of four boys and two girls, to bear it to the object of their care. In truth, not all of that milk reached Mr. Pup, for some of it was afterward found by the cook ornamenting the kitchen floor, and some more of it might have been seen giving a variety in color to the trousers of certain small boys. Puppy, if he knew nothing else, evidently knew how to drink milk, and the children watched his successful efforts with delight.

"He's a cross between a Newfoundland and a Shepherd dog," remarked Payson, "that's what makes his hair so curly, being part Shepherd. But you can't play with him, until he is older, it will spoil him. I'm going to keep him in the little room over the carriage-house." When the small dog had finished his meal, Payson took him up, and walked toward the carriage-house, followed by the procession, Bob, as usual, bringing up the rear.

"What's his name going to be?" asked Alice.

"Lieutenant-General Ulysses S. Grant!" said Payson, who was very patriotic.

"But that will be so long!" exclaimed Horace.

"We'll call him General for short," was the answer. So General was Puppy's name from that time.

For two or three months General was kept in strict seclusion, but toward the last of July, Payson began to allow him more liberty. By this time he was almost treble the size he was when he drank the first bowl of milk, and was old enough to know the meaning of *fun*. Such chasing and hiding as there was in the garden, such barking and screaming, laughing and growling! And oh! such mysterious holes in the backs of little boys' stockings, and torn places in little girls' skirts, as Mrs. West found. General's teeth were small, but they were sharp, and he had yet to learn that they were only to be used on rats, and bones, and robbers.

About this time three dear little kittens arrived at Maple Hill. Janie named them—the light gray one Friskus Stumps, the black and white one Nelly Briggs, and the small, dark gray one Annie Payson. General was on very good terms with Friskus and Nelly, but Annie Payson was his bosom friend. They ate together, slept together, and almost talked together. When the cook gave them a dish of food, General waited most politely, until Annie had made her selection, and took what remained himself. Mrs. West told the children, they might learn a lesson in kindness even from a dog.

Wherever the children went, there followed little Annie and big General, for General, though still a puppy, was little no longer. Often, on hot, sultry days, the whole party emigrated to the "backwoods" on the east side of the farm. There it was always cool and fresh, there were strange rocks and countless trees, and a wild swamp, in which were snakes, lizards, and turtles, where even Horace did not care to go alone. Horace and Frank tramped about, looking for sapling hickories for canes, and sassafras to put away to season for bows. Alice discovered beautiful ferns and mosses. Janie and Joe found new rocks and caves, while Bob got in every one's way, and always thought a bear was coming.

As for General and Annie, I do believe they had the best time of all, for they had no clothes to tear, no shoes to cut, nobody to scold if they came home late. General was never quiet, he raced from one place to another, always finding some new excitement. He thought there was a woodchuck under every rock, a squirrel up every tall tree, and he got so hot and tired digging and scratching at mysterious holes, that he was forced to lie down in the brook to cool himself.

On rainy days the children resorted to the great barn, a perfect paradise for dogs and children. On either side of its great floor were the mows, piled high with hay, and over them the straw-loft, mainly occupied by pigeons, and visited at times by daring boys, at the risk of a dangerous tumble. General was capital at playing "I spy." No corner was deep enough and dark enough to hide the occupant from his keen eyes, no boy so covered with hay, but that General could dig down to him in a minute—he went from one hiding-place to another, until all

were discovered, and then stood panting, breathless, triumphant, with his hair full of hay-seed, and his head covered with cob-webs.

But days of frolic have an end, and friends, however dear, can not stay together forever. In the fall Mr. and Mrs. West moved to the city for the winter, and General and Annie were left behind in charge of Horace and Bob White, who lived near by. After his cousins had gone, Horace went to find and take home their pets. General came bounding at his call, but Annie was nowhere to be seen. After a long and vain search Horace was forced to go home without her. For several days he looked for the little cat without avail. General, too, only came to his new home at meal-times. At last Horace resolved to follow the dog one day, as he was making off after eating his dinner; so he went after him, up to Maple Hill, past the house, to a deserted tool-shop near the quarry, and there, on a work-bench, sat Annie, whom her good friend would not desert in her loneliness. Horace took Annie home with him, and together she and General lived contentedly, until they joyfully welcomed back their young playmates, when they returned to the country in spring.

Aunt Sue's Puzzle-Box.

DOUBLE ACROSTIC.

The initials form a county in Tennessee, and the finals name a river in Russia.

1. A county in Vermont. 2. A county in California. 3. A county in Ohio. 4. A county in New York. 5. A county in Michigan. 6. A county in Mississippi.

WILLY BURT.

CHARADE.

Without my first this beauteous earth
Would be a desert wild;
And kings their empty honors scan
When from them 'tis beguiled.

My second is an ornament,
By men and women worn,
A weapon or a harmless toy,
Perhaps you've seen it drawn.

A pleasing sight I think you'll own
My whole it is to see;
The emblem of a promise rare,
Through ages yet to be. GILES FARMIN.

CONCEALED VEGETABLES.

1. Father, is Tom at Ophelia's? 2. Yes, he has gone to take her a dish of apples. 3. I want you to leave this flower-pot at Osgood's. 4. Let that be, and hurry off. 5. Here, Amos, pin a check on this parcel. 6. We had better go on, I only have an hour to walk. B. A.

RHYMING ANSWERS.

See what a glittering show,
List to my musical flow,
In our inmost hearts often they glow,
Sharp as a skin-piercing thorn,
Where the whale floathed I'm borne,
Holding my treasure of corn,
Ah! it is tender, my boys,
Hark to the horrible noise,
Virtue and peace it destroys. T. AYLOR.

CROSS WORD.

My first is in rafter but not in beam,
My next is in slumber but not in dream,
My third is in elbow but not in arm,
My fourth is in terror but not in alarm,
My fifth is in wisdom but not in sense,
My sixth is in dollars but not in pence,
My seventh is in dahlia but not in a rose,
My whole is a place where the orange grows.

TRANSPOSITION.

When bruised I represent the weak
In whom we little comfort seek,
Transposed, a creature much more fleet
Than many others that we meet. HENRY.

NUMERICAL ENIGMA.

I am composed of 13 letters:
My 1, 2, 7, 4, 5, is a part of the body.
My 9, 3, 8, is a boy's nickname.
My 10, 13, 12, is a way of sewing.
My 11, 6, is an exclamation.
My whole was a messenger, cheery and bright,
Whose coming we once hailed with joy and delight.

ROSE-BUD.

PI.

Hatt ruetan viges ehr hidandma, tar,
Het shemet fo tewes croudingsis;
Het rednet sidly fo het earth
Ni veery guntoe shcrearing. TOM.

ANSWERS TO PUZZLES IN THE NOVEMBER NUMBER.

NUMERICAL ENIGMA.—James Fisk, Jr.

CROSS WORD.—Jackdaw.

DECAPITATION.—Trice, rice, ice.

ANAGRAMS.—1. Lamartine. 2. Martin Luther. 3. Schiller. 4. La Fontaine.

PUZZLE.—Commence in the center and read around "Jack of all trades and master of none."

DOUBLE ACROSTIC.—P— u —P
O— ehr —A
P—owderhor—N
P— atho —S
Y— earl —Y

EQUIVOCAL WORDS.—1. Beetle. 2. Bill. 3. Bit. 4. Blade. 5. Blow. 6. Air.

DROP-LETTER PUZZLE.—Time and tide wait for no man.

SQUARE WORD.—P A S T
A C H E
S H U N
T E N T

TRANSPOSITIONS.—1. Meat, tame, mate, team. 2. Dame, made, mead. 3. Fête, feet. 4. Mope, poem. 5. Dear, dare, read.

HIDDEN SOUTHERN CITIES.—1. Raleigh. 2. St. Antonio. 3. Tallahassee. 4. Pensacola. 5. Jackson. 6. Austin.

PI.—We share our mutual woes,
Our mutual burdens bear
And often for each other flows
The sympathizing tear.

DIAMOND PUZZLE.—
A
T U B
H A G U E
A U G U S T A
B U S T S
A T E
A

Thanks for letters, puzzles, etc., to Carl, Ben, A. D. E., F. W. W., Snip, Gussie S., Addie, Geo. W. T., G. Mason, Kitty, and Isola.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

Aunt Sue's Chats.

TO CORRESPONDENTS.—Lest any should deem me guilty of discourtesy in not answering inquiries, I wish to explain that six weeks must elapse, under the most favorable circumstances, before my reply could be published. And if then, for any reason, the notice cannot appear in print, another month must elapse. So when you say "please answer in the next number"—please understand it is not possible.

LINNIE.—I will give you the "instructions for *spatter-work*" soon.

W. H. W.—If your puzzle was sent simply for our amusement, we are much obliged. If for publication, we are just as much obliged, although we do not want to give our readers any but original puzzles.

EFFIE.—No, dear, "rosewood" does not come from any "rose-tree." I think the chief reason for calling it rosewood is, because when the wood is first cut it emits a strong, rose-like fragrance. There are several kinds of rosewood trees, which are found in South America and the East Indies, and neighboring islands. The trees are sometimes so large that planks ten feet long by four feet in width may be cut from them. The wood is so valuable that in some of the forests where it once grew abundantly, scarcely a specimen of it is left. The Madras Government has the good sense to keep setting out plantations of it.

A young gentleman, writing to me from Aultsville, Ont., says:—"Dear Aunt Sue—Would you be kind enough to explain in your 'Chats' how to make a kite. I built one, and I could not get it to fly at all; so I concluded to ask you. It would rise all right, and then turn

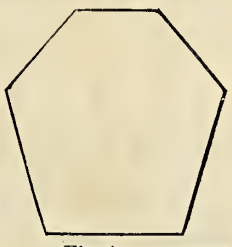


Fig. 1. MAKING A KITE.

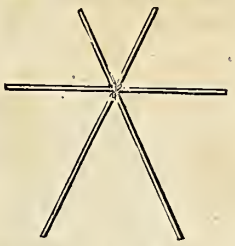


Fig. 2.

over and fall on its head. I tried several times to fix it, but could not make it fly. So if you will answer this, you would do me a great favor. Yours truly J. H. C."

I like this boy's evidence of faith in his Auntie; it isn't every lad who would think that a woman knew anything about kites; but I happen to have made kites, and have been out with the children to fly them; and mine would "turn over and fall on their heads," until experience taught me how to remedy such eccentricities. The great principles of kite-making are, first, lightness; second, well-balancing; and third, the proper angle of ascension. If the strings were properly adjusted to which you attached the ball of twine, then the trouble was probably

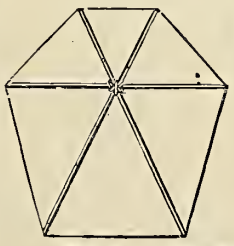


Fig. 3. KITE FINISHED.

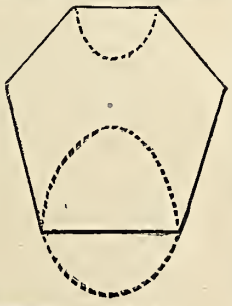


Fig. 4.

in the tail; perhaps it was not heavy enough; or if heavy enough, it might have been too short. You do not say what shape you made your kite; was it the old-fashioned pear-shape? The most satisfactory kite to fly, in my opinion, is one the shape of fig. 1. I never have any difficulty with one of that kind. I don't suppose I need describe their plan of construction, but perhaps it may help some of the boys who are not posted. Take two sticks of light wood, say ten inches long, and one seven or eight inches, and fasten them together, as in fig. 2, by winding strong thread around them where they come in contact. Now pass strong thread or fine twine around the ends of the sticks, as in fig. 3. Fasten the ends tightly. When this frame is completed, lay it on a thin, but strong paper (paper-*muslin* is the best) and cut the paper the shape of the frame, allowing about half an inch all round to paste over the twine, (if you can't get paste, you might baste it round with needle and thread). Now you have your kite made as far as fig. 1, and the important operation of fastening on the strings commences. I make a loop, from the top of the two upper sticks, that hangs down nearly to where the three sticks are fastened together; and a loop from the two lower ends that reaches nearly up to the other loop (as in fig. 4); also a pendent loop (as in fig. 4), on which to fasten the tail. Now take the end of your ball of string, and pass it through the two (upper) loops, fastening them together, but not closely, as seen in the side view, fig. 5. This plan gives the string plenty of play, which is desirable.

Fig. 5.—THE STRING.

Now fasten on to the pendent loop a good long, narrow tail, and if your kite is light enough, I do not think you will have any difficulty in raising it and keeping it steady.

We have received another cat story from our friend in Wisconsin. It is not quite so interesting as the last, but as it shows how persevering good-nature will at length overcome moroseness, even in a cat, we will publish it.

We have an old cat by the name of Nig; he has long been our only pet, and he feels his rights to be many, and does not like to have them infringed on. Baby likes Nig and longs to fondle him, but Nig does not like to have baby rub his hair the wrong way and poke her fingers in his eyes, or tug him around under one arm; so we procured a little kitten to please baby, and named him Ned. Ned is a lively little fellow, and he no sooner saw Nig than he proposed a frolic, but sober old Nig declined the offer with great dignity. Ned was not to be discouraged, so at every opportunity he was busy plaguing Nig, jumping on his back, putting both paws around his neck and biting him, playing with his tail, and cutting up many other pranks, until at last he wore his way through Nig's dignity, and now they have the greatest of frolics. Nig is very careful not to hurt Ned. One evening, during their rough-and-tumble hour, Ned hid under a chair, and prepared to spring out upon Nig, Nig very leisurely walked up to Ned, cuffed him on the side of his head, as much as to say, "No more nonsense to-night," then went off and lay down. Ned played by himself for a long time before he went to bed, but did not offer to touch Nig again. I thought that was good government, and an obedient kitten. It would be pleasant if all children would obey their parents as promptly. I would add that Nig has got so he will sometimes bring game to Ned.

The Doctor's Talks—About Various Matters.

Here is quite a lot of letters from my youngsters far and near, and to answer them I must say a little about various things.—When I say "youngsters," of course I mean girls as well as boys, for I should be sorry to have the girls think they were not included.—We will begin with a girl's letter—little Minnie D. S., who lives in Missouri; she is only 11 years old, and has already learned to use her eyes better than some older persons do. Minnie one day went to the creek with her father, and seeing something on a bush that looked like an eatable berry, she picked it, and finding that she had never seen anything of the kind before, she took it to her father, who said it looked like "Waahoo," but was not sure. Minnie evidently is a girl who wishes to be sure, so she very sensibly sends a specimen to the old Doctor,

ASKING "WHAT IS IT?"

and wants an answer in the *American Agriculturist*.—Your father was right, Minnie, the fruit sent is that of the bush known in the western states as *Waahoo*, but in the east, for it grows all the way from New York to Missouri, and from there on to Oregon, it is known as Burning-bush and Spindle-tree. You may think I made a mistake in calling this a fruit, but that is just what I intended to say; we sometimes use the word fruit—to mean an eatable product; but in describing plants, whatever follows after the flower, and contains the seeds, is properly the fruit, no matter whether it is hard and dry, or juicy and eatable. This fruit sent by Minnie, when first

ripe, is not round, but has 3 to 5 ridges, or scollops on the sides, and is of a fine crimson color; soon it breaks open through these ridges, and shows a seed in each, and these seeds have a bright scarlet coating; so the scarlet and crimson together make the fruit very showy. The climbing vine called Wax-work, or Climbing Bitter-sweet, is a near relative of this, and has round pods, which show two colors when they break open. So Waahoo and Burning-bush are the best known common names, and if you would like to know what botanists call it—it is *Euonymus atropurpureus*. Generally a good reason can be given for these botanical names, but *Euonymus* is not easy to explain; *atropurpureus*, means blackish purple, and if you look next spring when the shrub is in flower, you will see why that name was given, for the little flowers are very dark colored. Let me tell Minnie something else about the Waahoo. If there is room in the front yard for any more shrubs, have a young plant or more of this dug up and set out; it will make a handsomely shaped shrub, and when it gets a good size, and the leaves drop in the fall, leaving a great quantity of fruit, you will understand why some one called it "Burning Bush."....Here are two boys who are

NOT TO BE HUMBUGGED,

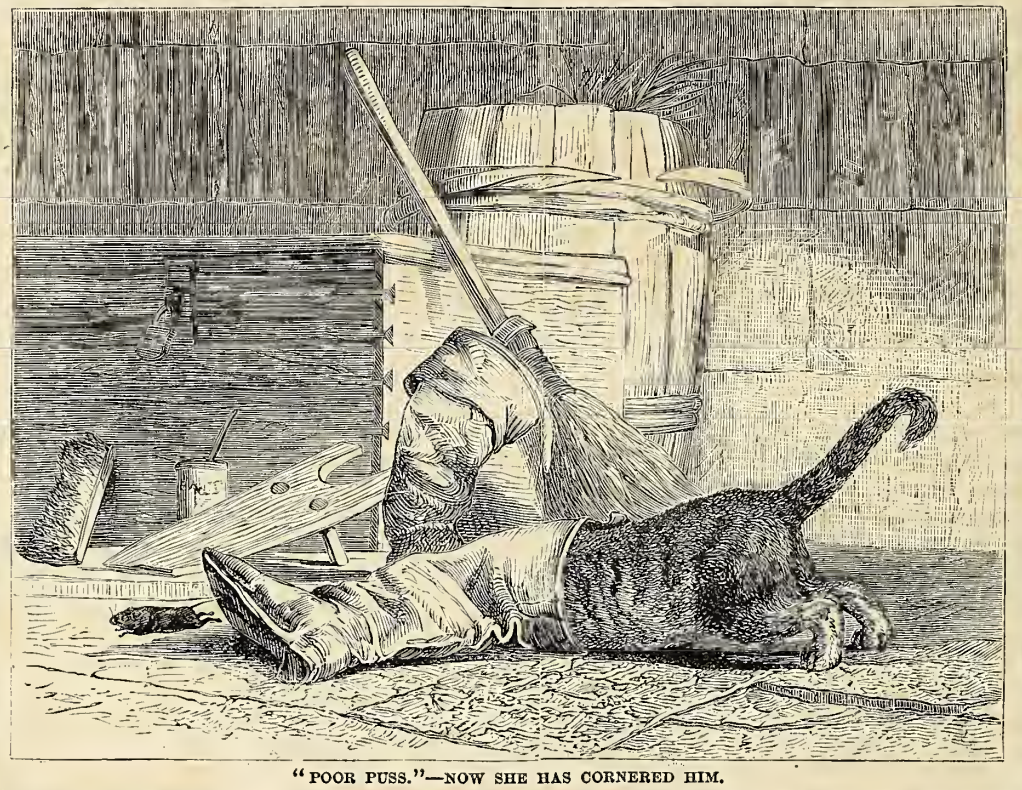
if they do live in an out of the way part of Florida, where the mail at best comes but once a week, and sometimes forgets to come altogether. These two boys, Ernest and Porter, write me just the neatest letter I have seen in many a day; they enclose a circular of the "Brazilian Perfume Stone," with a picture of the wonderful "Perfumed Cave." They have never before heard of a "Perfumed Cave," and ask if it has any existence, and then very shrewdly guess at the whole matter, by asking if any boy or girl could not saturate a piece of pumice-stone with some perfume, and make as good a "Perfume Stone" as any that comes from Brazil.—Boys, you have hit it exactly. Were there such a cave as this is described to be, it would be generally known as one of the wonderful natural curiosities, and we should not first hear of it from a peddling concern in an obscure New England town. There are stones which have odors, especially when rubbed, or struck with a hammer, but I never knew of one that could be called "perfumed," though there is one which deserves its name of "stink-stone." You may be very sure that this "Perfume Stone" is a piece of sand-stone, pumice-stone, or other porous kind to which the perfume has been added. Set that down as a humbug. Ernest and Porter not only ask questions, but they tell something of interest about

PARROQUETS AND COCKLE-BURS.

The Carolina Parrot, or Parroquet, is a very handsome bird with green, yellow, red, and blue, in its plumage: many years ago it was found as far north as New York, but has become less and less abundant in the southern states, until Florida is the only one in which they are found in large numbers. These boys now and then catch and tame the parroquets, and at first have a lively time with them, but they soon become gentle: the favorite food of these birds is the cockle-bur, or clot-bur, which probably every farmer's boy in the country knows, if he does not have any name for it; its fruit or seed-pod is from one-half to an inch long, and covered all over the outside with hooked prickles; it is that troublesome thing so apt to get into the wool of sheep, and the tails of horses and cows, and so difficult to get out. These burs contain two large seeds, and the boys think the way in which the parroquets get them out is something wonderful to see, and say that until they saw the birds come in great flocks to feed upon them, they had no idea what cockle-burs were good for....From these Florida boys, we turn to the next letter, which is from Long Island, in which Jessie F. C. asks why New York is called

THE EMPIRE STATE.

It is difficult to know how or why the nick-names of the different states were given, as some have not the least appropriateness: thus Michigan is called the Wolverine state, but I have been told by persons who have lived long in the wild parts of the state, that they never saw a wolverine, and that the animal is an exceedingly rare one. As to the Empire state, that may have been assumed boastingly by persons who thought that

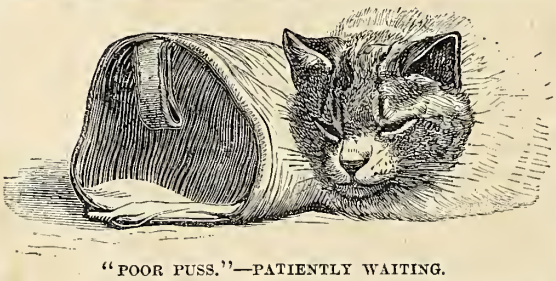


"POOR PUSS."—NOW SHE HAS CORNERED HIM.

New York possessed great political control, on account of its large vote in the election for President; or it may have been so called because it formerly was the only state bordering on the Atlantic, which, by its canals, railroads, and lakes, could control the trade of the great west. If any of you can give our friend Jessie a better reason, I hope you will do so....Charles R. H., near Bangor, Me., wishes the Doctor to tell him

HOW TO MAKE GLUE,

to "mend things," and to put together the fancy articles he makes. If you have much glueing to do, it may pay to get a little glue pot, which is an outer iron pot holding water, into which sets an inner pot of tin or copper to hold the glue; this arrangement is to keep the glue from being over-heated and burned, as it can get no hotter than the water in the outer pot. You can imitate this with two tin cups, or by having any convenient dish to hold the glue, and placing this in a sauce-pan holding some water, with some nails or pebbles in it to prevent the thing which contains the glue from resting directly



"POOR PUSS."—PATIENTLY WAITING.

on the bottom of the other. Two empty tin-cans, such as are used for fruit, tomatoes, condensed milk, and the like, of unequal sizes, will make a handy glue-pot. You can buy glue at the hardware or drug stores; do not get white glue; the brown which looks clear and bright and has no bad smell, is likely to be good. To prepare the glue wrap a cake or sheet in strong brown paper, and lay it on a hard surface, and strike it one or more sharp blows with a hammer; the paper is to keep the pieces from flying; put as much as you think you will need into your cup, put on enough cold water to cover it, and let it stand in a cool place (not freezing) for several hours; it will swell up, and when the pieces can be readily bent, pour off and drain off every drop of water, and set the cup containing the soaked glue into the vessel containing cold water, and place on the stove to heat gradually; when thoroughly melted and hot, the glue is ready for use, and is to be applied with a brush. Recollect, the nicer and more closely fitting the joints, and the less the quantity of glue used, the stronger the work will be. It is well to warm the work before putting on the glue, then apply it and bring the parts together quickly; the manner of holding the work until the glue hardens, must be thought of before-hand, for it must be kept in place for several hours; the cabinet makers use clamps or hand-vises of various kinds, and if you have nothing like these, you must contrive by wedges, straps, strings, or other substitutes, to hold the work firmly....The rest of the letters must remain for the present....I hope to hear from the boys and girls more frequently this year than ever before, not only those who have long been our readers, but the many new ones who will begin the year with us. To all, both old and new,

A BIT OF ADVICE.

Don't apologize or make any excuse for writing—understand once for all, that I am glad to have you write; it takes up a great deal of my time to read these excuses, and it costs you the time to write them. So recollect, you are always welcome, and no apologies needed. If you do not find that your letter is answered, never mind, and be sure there is some good reason for it; don't take offence, but write again when you have need to do so; I can not write to each one and explain the matter.—Always send your name; you can sign what you please, but I must have the name also.—Several have forgotten this.—Don't send puzzles for me to answer. Here is one about a man starting from New York on Monday, traveling west as fast as the sun, (!), and some one wants to know where he would be when it was Tuesday. I do not know, nor do I think it of the least interest; the knowledge of where that impossible traveler would be, will not make any one a bit wiser or better, and I have no time to spend on such things. Send puzzles to Aunt Sue, and she will, if she sees fit, give them in her "Puzzle Box." But please do not send them to THE DOCTOR.

POOR PUSS.

Here is a pict-ure sto-ry that all lit-tle boys and girls will like and laugh at. Puss was chas-ing a mouse, and she had al-most caught it; but there was an old boot on the floor, and the mouse ran in-to the leg of it. Puss went in af-ter the mouse, but she was big, and the leg of the boot was small, so she could not get far in-to the boot. What could puss do but sit down by the boot, and wait for the mouse to come out? In the low-er pict-ure you see her sit-ting very qui-et-ly, for she is sure that by-and-by the mouse must get tired of stay-ing in the boot, and will come out, when she can catch it. She does not look as if she were watch-ing very sharp, but you can see by her ears that she listens for the least sound, and is all ready to spring when the mouse comes. Poor Puss!. she waits in vain; she will not soon see that mouse again; she does not know, as you do, that the boot was a worn-out one, and that there was a hole in the sole through which the mouse went out. May be the mouse is some where laughing at the cat. At any rate, we will laugh at her, for is it not a fun-ny story?

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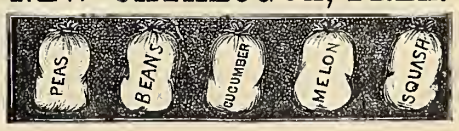

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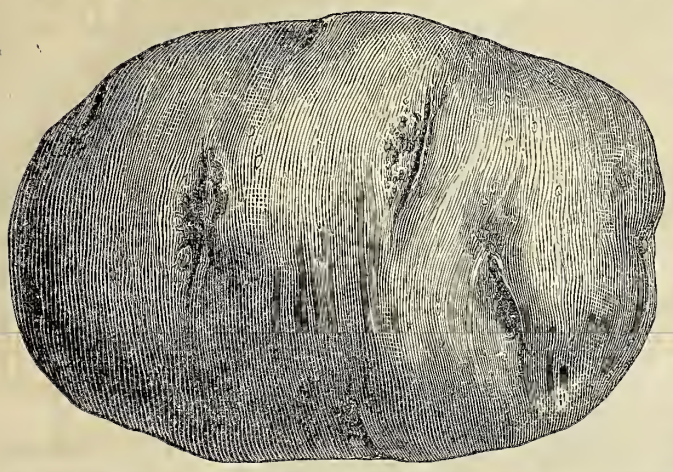
A New Potato.—The Early Ohio.



This first-class potato is the first *of my own introducing* since I several years ago sent out the Excelsior. Meanwhile I have received from kind friends, on an average, about fifty new seedlings a year. To all of these I have given a careful and conscientious trial of their merits, on my experimental grounds, planting them with note-book in hand, and following their growth and development, with note book, throughout the season. Ultimately I have found but three out of over two hundred seedlings that have proved themselves to be decided acquisitions. I last year sent out one of these seedlings, viz.: the EARLY OHIO. This is one of the numerous seedlings of the Early Rose, but while almost all of these are so like their parent as to be undistinguishable from it, the EARLY OHIO, while in color like the Early Rose, is, in shape, quite distinct, being round-oblong instead of oval-oblong, so that side by side it is readily distinguishable. Eyes about as numerous as those of the parent, while the brows are rather more prominent. On the largest specimens, the cluster of eyes at the seed-end are located slightly one side of the longer axis. Quality excellent. Grown side by side with the Early Rose, *it proved several days earlier, while the yield was a third greater.*

The above engraving is a very good likeness of the Early Ohio. The result of another season's trial of its merits, side by side with all the new seedlings now before the public, besides over thirty new varieties sent me from various localities in New England, the Middle and Western States, each of which being sent as a new seedling of special promise, leaves the Ohio in the same high rank it held after the trial of last season, viz.: 1st, *as decidedly earlier than Early Rose*, and 2nd, *as emphatically a better cropper than any other variety equally early*, and equalled by but two of the later varieties. I add extracts from letters received from farmers residing in several States who grew the Ohio last season. One grower who tried over twenty of the standard varieties, early and late, found that the Ohio excelled them all in cropping qualities.

"Last spring you sent me one pound of the Early Ohio, and I raised two hundred pounds." WM. H. CORNISH.
Carmel, N. Y., Nov. 10, 1875.

"From the two pounds (Early Ohio) I bought of you, cut to single eyes, with only common cultivation, I dug on Aug. 1st, four bushels, by measure, of as fine potatoes as you ever saw, nearly all being large size, and much better than Early Rose. The season was very dry indeed, and the bugs awful. It was a big yield. They were the earliest out of twenty-one varieties tested this season. Boils nice and mealy."
Horsham, Pa., Aug. 24, 1875. ROWL. ROBERTS.

"I purchased one pound of Ohio Earlies of you last spring. I raised 240 lbs. of potatoes of fine size and shape. They were earlier than Early Rose, and were dry and good flavored. We think a great deal of them."
Sandwich, Ill, Oct. 27, 1875. ANDREW GRAHAM.

"From the one pound of Early Ohio potatoes obtained of you last spring, I have raised eighty pounds of as nice potatoes as ever was harvested—so the neighbors say."
Barre, Vt., Sept. 20, 1875. M. V. BAILEY.

"Last spring I bought one pound of Early Ohio potatoes for $1. They have more than met my expectation. They yield well, and I should say were fully one week earlier than Early Vermont, side by side of which they were planted. For eating they are simply superb." GEO. W. HAVEN.
Bloomingdale, Mich., Oct. 27, 1875.

"From the one pound of Early Ohios I dug 212 lbs., which was two pounds over three and a half bushels. I would like to know if any person has beat that. I had several of them that weighed over two pounds. I consider it a well spent dollar for that pound." JAMES DRUMMOND.
Forbetti, Kansas, Nov. 17, 1875.

JAMES J. H. GREGORY, MARBLEHEAD, MASS.

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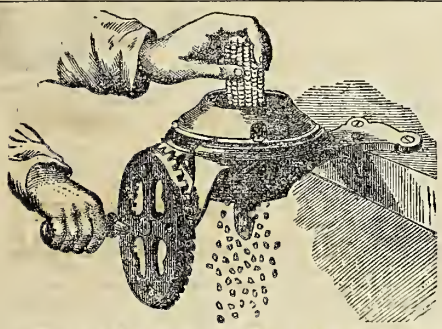

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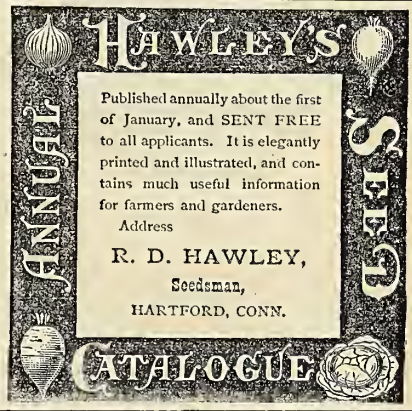

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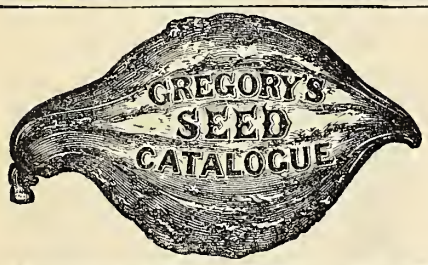

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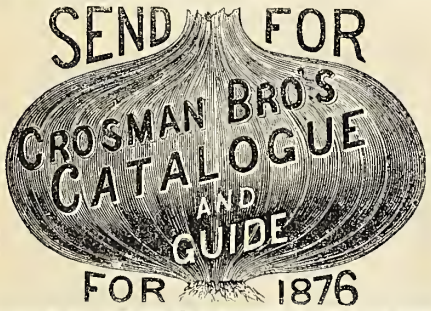

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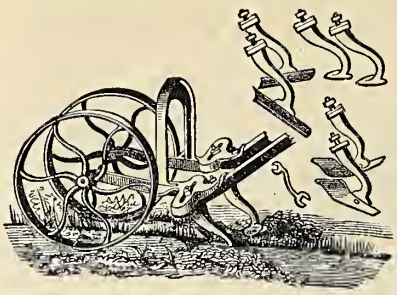

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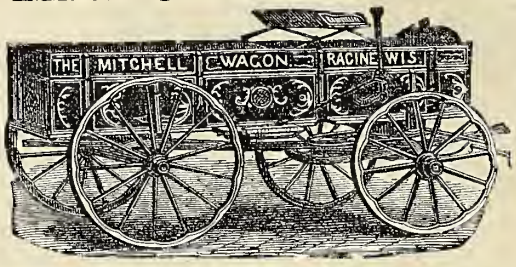

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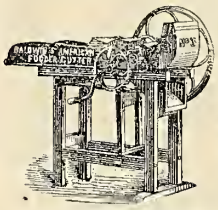

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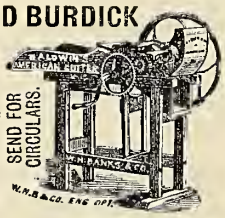

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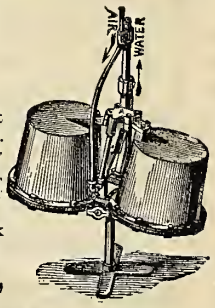

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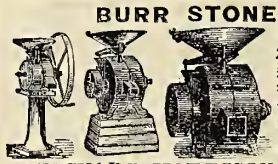

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7	*Child's Self-operating Swing (do. do.)*	$ 4 00	9	32
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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 7.

Grinding Bones.—"M. T. H.," Fremont, Ohio. Bones can not be ground in a tanner's bark-mill; a mill grinding them needs to be made much stronger, and of different construction, on account of the excessive hardness and toughness of some of the bones. When well burned, bones may be crushed in a bark-mill, and ground fine upon a "country" stone, or a burr stone, in a grist or plaster mill. In burning bones, the most actively fertilizing matter, the gelatine which produces ammonia in its decomposition, is lost, and the phosphate of lime, with a small quantity of carbonate only, is left.

Feeding Cattle and Horses Together.—"H. E. F." There is no reason, so far as health of the animals is concerned, why horses and cattle should not be kept in the same stable, and upon the same floor. For convenience and safety there should be separate entrances for the horses and the cattle, and the stalls should be separated by partitions.

Gathering Ice.—"W. H. M.," Springfield, Mass. Ice should be cut and stored as soon as it is thick enough. Eight inches is a good thickness for it, a foot is better. The tools required are a cross-cut saw with one handle removed, and an ax to cut the first holes. The blocks should be cut of equal size. 20 pounds a day is a good allowance for a family, which for 200 days would amount to two tons. But a considerable allowance must be made for waste. About 10 loads will be required for a small ice-house.

Rich Jersey Milk.—"C.," Petersburg, Va., states that he procured a pound and a quarter of butter from 6 quarts of milk, from a Jersey cow exhibited at the agricultural fair of Washington county, (Va.), in October last. The milk was set for three days before it was churned.

Profit in Poultry.—"L. N. S.," Colfax, Washington Terr., sends the following extract from his account book, of the cost and proceeds from 55 hens and five turkeys, during a season of nine months, kept when he was a resident of Litchfield Co., Conn. The hens and chickens consumed altogether over 200 bushels of corn and meal. The cost of hens and their food was $252.33. The proceeds from eggs, etc., were as follows, 298½ dozen eggs, $81.66; 2053½ lbs. of poultry, $314.32; 383½ lbs. turkeys, $61.07; manure sold, $6.84, total, $463.39; leaving a profit of $211.04.

Blooded Stock.—"C." Petersburg, Va. The term "blooded stock," is used to designate pure blooded stock, or animals of pure lineage, belonging to an established breed. It is used "for short." It does not necessarily apply to imported stock, yet all the so-called "blooded stock" we possess, has descended from imported animals.

Foul Sheath.—"T. H.," Fond du Lac, Wis. Foul sheath in a horse, may generally be remedied by washing with soap and water. If this is not effective, a solution of cloride of zinc, (four grains in an ounce of water), should be used. Carbolic acid may be substituted for the cloride of zinc. Half an ounce of sulphur may be given to the horse daily for a few days, in the feed. The parts should be thoroughly cleansed, and returned while wet with the solution. It may be necessary to use a syringe, and inject the solution, to reach the inner portions of the sheath.

A Crop of Mangels.—"L. P. G.," Nazareth, Pa. A pile of mangels 8 feet long, 3 feet wide, and 2½ high, would contain about 40 bushels. If these were grown upon a patch of ground 43 feet long, by 30 wide, it would be equal to nearly 1,400 bushels, or 42 tons per acre. This would be as large a crop as is generally raised, and more than an average one.

From North Carolina.—"T. B. W.," Macon Co., N. C., who has recently settled in this part of North Carolina, sends his impressions about the locality. He writes that the climate is very agreeable, the water of the best, and the scenery lovely. The fruit is excellent, there are no caterpillars or codling moths. The country is well adapted to stock. Beeves that have been running at large during the summer, are driven off for sale fat in

October. Beef is 4½ cents per pound for hind-quarters. The farming of the natives is of the poorest description. Stock are allowed to run in the woods all the winter, and when snow falls, some trees are cut down, upon which the cows browse, eating the twigs and small branches. The principal crops are potatoes, corn, and buckwheat, of which enough to eat is gathered, and the rest is left for the hogs and cows. No hay is cut, although grass is plentiful. Land is very cheap, and the soil so excellent, that a few good northern farmers would soon give the locality a high reputation.

Value of "Shucks."—"C." Corn-shucks, or husks, are not of much value for feed. "Not worth shucks" is a common adage expressive of the popular estimate of their worthlessness. Nevertheless, cattle turned upon corn-stubbles, will pick up all the husks with no little eagerness.

To Reduce a Sow's Condition.—"D. S. G.," Linn Co., Kansas. Nothing more is necessary to reduce a sow that is too fat, into good breeding condition, than to turn her into a field where she may pick her living, and withhold corn from her; or feed only an ear or two daily. A sow must be very fat to fail to breed.

A Manure Cart.—"R. A. J.," Troy Center, Wis. Under favorable circumstances it would certainly pay to spread liquid manure over some crops. The crops to be thus grown, should necessarily be more valuable ones, and those of low growth. Meadows after having been mowed, might be fertilized with liquid manure more easily and evenly than to top-dress them with solid manure, and if there were facilities for saving all the liquids of the stable and yards, and diluting them with water, they might be spread upon grass, young corn, or root crops, with profit. The cost of spreading is generally about 25 cents an acre. Ten acres a day can be watered with a cart having an 8-feet spreader, if the distance is not too great from the cistern.

Crooked Geography.—The Revue Horticole says that the *Agave Considerantii*, about the proper name of which there is some discussion, "is indigenous to the cold parts of New Mexico, (of Texas), where it is found * * * between Monterey and Saltillo." This locality is not within a thousand miles of the nearest point of New Mexico, and some 200 miles from any part of Texas, being in Mexico proper.

A Highly Honored Tree.—We get as much amusement in reading the advertisements in the English horticultural journals, as we do instruction from their editorial pages. One nurseryman, who has a new variegated evergreen, instead of telling us of its peculiar merits, gives the prices of specimens, and says, in conspicuous type, "They have been planted by the following Royal and Noble Hands." This is followed by a list, not of "hands," but of persons supposed to own those useful members, comprising 50 or more names, beginning with H.R.H., the Prince of Wales, and nicely graded down to common "Sirs." It is very likely that this advertiser knows that such stuff will pay—but it looks very funny to us.

Pekin Ducks.—The rapidity with which these ducks have become popular, is something remarkable. Their quiet disposition, rapid growth, and large size, are much in their favor; besides this they are very ornamental, as may be seen by those who visit Central Park, New York, where there are some fine specimens, contributed by Mr. James E. Sisson, of Westerly, R. I.

Notice to "The Garden," (London).—This journal, in quoting an item about that best of squashes, the "Butman," speaks of it as a "Squash Gourd." No, Sir, our squashes are *not* gourds any more than our blackberries are "brambles," our sweet potatoes "Yams," (as you had it the other day), or Sequoias "Wellingtonias," and if you don't stop calling things "out of their names," and cease speaking of the squash as a "gourd," we shall feel obliged to call the attention of President Grant to the matter. Recollect that we are near the Centennial birthday—and there are some things we just won't stand. British Garden, beware! The Great American Potato Beetle has its eye on you.

The Texas Cattle Tick.—"J. Y. H.," Montgomery Co., Pa. There is no remedy for the Texas cattle tick, but to keep Texan or western cattle out of the pastures. The tick does not convey or cause the disease, it is contact with the Texan cattle in the pastures by which it is communicated. A very simple means of prevention is to keep the western cattle completely isolated, and not to allow any native cattle to go into the field with them, nor to approach the fence of a field in which they are or have been this season. If there is any risk of contagion, the suspected cattle should have their mouths and noses and their whole hides rubbed over with a sponge moistened with a solution of one ounce of fluid carbolic acid in a gallon of water; half an ounce of sulphite of soda should also be given daily for a week or ten days after they have been exposed to infection.

Tomato Leaves and Plant-Lice.—Every one who trains and prunes his tomato plants, knows that his hands become covered with an adhesive, yellowish, strong smelling excretion of the leaves. A French horticulturist, M. Sisroy, discovered, by accident, that this strong smelling exudation is poisonous to aphides, and that water in which tomato leaves had been macerated, was quite as effective in destroying plant lice, as tobacco water. Stick a pin here—and try it next summer.

Draining with Oyster Shells.—"W. W.," Richmond Co., Va. Drains might be filled with oyster shells, as well as with gravel or stones. We have never heard of their being thus used, but can see no reason why temporary drains could not be made in that way. The only defect would be that, the flow of water being interrupted and not steady, all the silt or sand that would necessarily be carried into the drains, would be deposited, and would gradually fill them, or stop them. But this result might not happen for many years. It might be well to try the experiment in a small way at first.

Left-Hand Plow.—"W. L. H.," Elizabethtown, Ky. There are no special advantages possessed by a left-hand plow. It is a matter of fancy altogether that leads some people to prefer them.

Decorticated Cotton Seed.—"F.," Henrico Co., Va. Unfortunately the manufacturers of our native oil-cakes of cotton-seed, linseed, and peanuts, do not seem to care for the home market, which, if encouraged, or even met half way, might in time be very valuable. Cotton-seed oil-cake is very rarely to be procured in any of our large cities, as it is shipped to England, where it meets with a ready sale. Peanut oil-cake is also shipped abroad for sale, where it goes under the name of earth-nut cake. The value of decorticated or hulled cotton-seed cake is from $30 to $40 a ton.

Value of Cotton Seed.—"C. N. F." Cotton seed is a valuable fertilizer. Its ash contains 30 per cent of phosphoric acid, and 36 per cent of potash, the ash being 3 per cent of the fresh seed. The fresh seed contains 25 per cent of nitrogenous matter, equal to about 4 per cent of ammonia. In use upon a crop of sugar in Louisiana, $15 worth of cotton seed has been known to increase the crop 2,000 pounds upon an acre. The usual cost of cotton seed is from 10 to 20 cents per bushel.

Effects of Pumpkin Seeds.—"C. W. D." When pumpkins are fed to milk cows, they should be split open and the seeds removed. The seeds are diuretic in their effect, acting strongly upon the kidneys, and therefore reduce the quantity of milk. It is worth the trouble to remove the seeds whenever pumpkins are fed to stock, as anything that irritates the kidneys, or excites them to action unnecessarily, tends to weaken those organs. The seeds are of no value to the cows, medicinally, as either saltpeter or sweet spirits of niter, is a much better and more certain diuretic to administer when one is needed.

Deep and Shallow Setting of Milk.—In a recent test made by Mr. L. Hardin, of Louisville, Kentucky, at a dairy in Chatauqua Co., N. Y., to which he went for the express purpose, the difference in the amount of butter made from the same quantity of milk set in deep and shallow pans was as follows, viz: one pound of butter was made from 21.53 pounds of milk set in shallow pans, and one pound was made from 21.51 pounds of milk set in deep cans. 185 pounds of milk taken from 15 cows at the evening's milking were used. The advantage equal to 2 pounds only in over 2,000 was on the side of the deep cans.

Goats for Colorado.—"F. W. R.," Griffin Co., C. T. The only goats whose fleece or skin is in demand, is the Angora goat, sometimes improperly called the Cashmere goat. It is doubtful if these goats would be found, at present, so profitable as sheep. The prevalent idea that they never suffer from diseases, or by dogs or wolves, is unfounded. They are no hardier than the Merino sheep, and are unable to protect themselves. Neither will they live or thrive without suitable pasture, although they will *eat* much rough vegetation. They are nowhere kept in large flocks that we know of, except in parts of California, especially on some of the islands off the coast.

To Keep Milk Sweet.—"D. D. L.," Central City, Colorado. A tea-spoonful of common bicarbonate of soda, such as is used for baking, dissolved in water and stirred into a pailful of milk, will prevent it from souring for several days.

Book on Poultry.—"C. L. S.," Bucksport, Me. Lewis' poultry book, price $1.50, and Wright's "Practical Poultry Keeper," price $2.00, are both useful works. It is difficult to say which of the two is to be preferred. Having both of them, one will possess about all the information necessary for a poultry keeper. Much new matter may be found in the last two volumes of the *American Agriculturist*.

Windgalls.—"W. S. C.," Wilkesbarre, Pa. An injury to, or an inflammation of, the tendons of the hind legs of a horse, will cause an excessive secretion of the synovial fluid, which gathers at the part affected, and forms soft swellings. These are known as windgalls. When they are on the hock, they are called bog spavins. They can not be permanently removed. Blistering may remove them temporarily.

Long Island Farming.—"I. B.," Sayville, L. I. It is usual with inexperienced persons to make very much too sanguine estimates of the profit of farming. As a rule, one may be sure that if this business could be made to pay 100 per cent yearly on the money invested, with no labor but supervision, every man would be a farmer in a short time. The truth is that the profits of farming, when most successful, are equal to legal interest on the capital employed, and less pay for the skill and labor expended than in any other successful business. But it is a safe and independent business, and one's capital is securely invested, and this is the chief attraction in it. An imaginary farm is a true "Spanish Castle" in nearly every instance.

The Mole Plow.—"W. W.," Milton Wharf, Va. The use of the mole plow is only a very partial and temporary expedient in the way of draining. It loosens the subsoil, and permits the water in the upper soil to sink to a lower level, or gradually to percolate through the subsoil, and to gather in the depressions until it sinks away. This implement can not be expected to make regular water channels, that could be of any practical use in carrying off the water. It would be an impossibility that its work should have the necessary accuracy for this. It is merely a substitute for permanent draining, and under some circumstances would undoubtedly be of great use for temporary purposes. Its effect would be subsoiling, and nothing more.

Planting Whole and Cut Potatoes.—"J. G. Q.," Tioga Center, N. Y., sends the following result of an experiment. He planted 12 hills of potatoes with two cut sets in each, and dug 72 lbs.; 12 hills with one large whole potato in each, and dug 60 lbs., and 12 hills with two small potatoes in each, and dug 48 lbs. The whole were planted 3 feet apart and were tended alike.

As to Homesteads."W. D.," Lonaconing, Md. A homestead can only be taken up by the applicant himself. He must enter his application in a certain form at the land-office of the district in person, paying certain fees at the time. There are plenty of homesteads still left in Nebraska and south-western Kansas. Lincoln in Nebraska, and Hutchinson in Kansas would be the nearest towns to the vacant lands, and the best places to go to get the necessary information. There are also plenty of vacant lands in western Texas. A thousand dollars carefully expended, should be sufficient to start a family of six persons comfortably upon a homestead.

Sow Eating her Pigs.—"S. L. M.," Orion, Ind. There is not always a reasonable explanation of the habit which some sows have of eating their pigs. It is undoubtedly an instinctive desire for animal food, arising probably from disordered digestion that impels them to this vice. A sow that has this habit should be given an ounce of gunpowder occasionally in her food. The charcoal, sulphur, and niter, of the powder are all useful, and in this shape may be conveniently given. Or in place of this a few hard wood coals may be quenched in water, and then given with a spoonful of sulphur and half as much saltpeter in the food. This mixture or the gunpowder should be given for a week or two before the sow farrows, and continued a week or two afterwards. When sows are shut up in pens, they are more subject to the vice than when running at large in a field.

Harness for a Bull.—"G. A. S.," Boston. The harness for a bull described in the *American Agriculturist* for August, 1875, can be made by any harness maker from the description and the illustration. Any ox-yoke maker can make the yoke.

Effect of Guano.—"J. T. McL.," Picton Co., N. S. When guano is applied to summer or fall grown crops, and because of a dry season its full effect has not been perceived, it is doubtful if the succeeding spring crop will be benefited, unless it be grass. Guano is very soluble, and the copious rains of fall and spring, or the melting snow of winter, would probably wash it into the soil beyond the reach of the next crop.

Umbilical Hernia.—"R. G. H.," Washington Co., N. Y. Hernia consists of an opening in the muscles of the abdomen, through which a portion of the bowels protrude. It appears generally as a small bunch or lump near the navel, and is not infrequent in colts. The opening through which the umbilical cord passes in the newly born colt, is a weak spot, and the most frequent seat of hernia. The remedy is to turn the colt on its back, return the bowel, and clamp the skin together with a pair of screw clamps, or pass a fine skewer through the doubled skin, bringing the edges of the opening in the muscular abdominal coat together, and winding a thread around the skewer, in the same manner as is done around the pin, after a horse has been bled. Care must be taken not to injure the peritoneum or inner lining of the abdomen.

Sheep or Cattle.—"A Subscriber," Sulphur Station, Texas. If a person knows how to manage sheep well, we believe there is more profit to be made out of them, than from cattle, especially upon a farm of 160 to 320 acres. The income from a flock of sheep may be from $4 to $8 per head, and five sheep may be kept, where one head of cattle can be. Besides the greater profit, there is less labor with sheep than with cattle. The capital required for both is about the same but it is more rapidly turned over in sheep-keeping.

Subsoiling Loose Land.—"E. W. J.," Akron, Ohio. When the subsoil is loose, open, and gravelly, subsoiling is unnecessary; upon such land it is generally sufficient to turn over the fertile surface soil, and to go no deeper with the plow than the soil can be manured. Gradually, as the soil can be enriched, the plow may go deeper, but much injury may result by plowing a thin, gravelly soil too deeply at first.

White Speck in the Eye.—"E. L.," Bradford Co., Pa. This is the result most probably of what is called "moon blindness," which generally terminates in cataract. First there is a large flow of tears, and the back portion of the eye is dull and clouded. The inflammation continues two or three weeks, and pus is formed, causing yellowish spots in the eye. The pus may be absorbed and disappear, or it may remain in part, leaving specks. In two or three months the attack is repeated, with the formation of more pus than before, until finally the whole pupil is filled with it, and a cataract is formed, which can only be cured, if curable at all, by a surgical operation. When the trouble first appears, the proper treatment is simply palliative, by frequently applying a mixture of one ounce of cold water with two drams of tincture of opium to the diseased eye.

Game Fowls.—"C. R.," Hart County, Ky. Game fowls are the best table fowls, and their eggs are well-flavored, and considered by cooks the best for cake and puddings. They are good layers. But they are as much subject to attacks by hawks as any other fowls. The game rooster, however, will give battle to a hawk that attacks a hen, if he is near enough, and will generally drive it away.

Sheep Raising and Wool Growing.—"H. H.," Canton, Miss. Randall's Fine Wool Sheep Husbandry is probably the best source of information as to raising sheep and wool in the southern states. The Merino is the most profitable sheep for the south, and southern grown wool, if the sheep are well cared for, is as valuable as that grown elsewhere.

How far Can Milk be Carried?—"C. J. B." If milk is "aired" and cooled as soon as it is drawn, and then placed in proper cans which are completely filled so that there will be no motion of the milk, and these are kept cool, it may be carried to a creamery distant a two hours' journey or perhaps more, without injury. At any rate it may probably be carried safely as far as the limit of cost will allow.

Boring Wells with Augers.—"P. A. K.," Fauquier Co., Va. To a person who knows nothing about the business of boring wells with augers, and who can not afford to lose his money, and hesitates to go into the business, we would simply say, Don't!

Patent Fence.—"J. C.," Cerro Gordo Co., Iowa. It does not follow that a patent fence which may not be considered worth paying $5 for the privilege of using, is a humbug. When patent rights are offered for sale no one is obliged to purchase if he does not think them worth the money asked for them. But if a person sees a new kind of fence in use by his neighbors and without enquiring if it is patented or not, builds one like it for himself, he ought not to complain if he is asked to pay a legitimate patent-right fee for its use. If the fence is worth using, it is worth paying for. The humbugs are those so-called novelties and improvements which have nothing novel or improved about them, and farmers should let such things alone.

Brittle Hoofs.—"C. H. D.," Susquehanna Co., Pa. Brittle hoofs are sometimes caused by the continual rasping down of the crust by farriers or blacksmiths; sometimes by the use of tar upon the hoofs, and it is often a constitutional defect of the horse. To remedy the defect in the former cases, refrain from the causes, and in any case the hoof is softened and made less brittle by rubbing it daily with pure glycerine and avoiding all contact with water or grease.

To Use Whole Cotton-Seed.—"J. C. B.," Mansfield, Texas. The husk of cotton-seed is hard and woody, and not easily digestible. When fed to horses or cattle, these husks frequently cause irritation of the stomach and intestines. Sheep which grind their food more thoroughly do not suffer in this way. When the seed cannot be hulled or ground, it should be softened by boiling or soaking in hot water, by which it is made more digestible. The cost of doing this would be well repaid by the increased value of the seed. See Prof. Atwater's article on page 10.

Steaming Feed for Cows.—"B. F. M.," Philadelphia. Steaming feed for cows is useful and economical when there is rough feed to be used along with meal or bran. It will be found to pay when ten head are kept, but hardly for less. In the *American Agriculturist* for January, 1873, is an article on cooking feed, with illustrations, in which full directions and explanations are given. It can be had for 15 cents.

Strong Manure.—"A Subscriber," Lexington, Mass. We never found any manure too strong for use. If it is very rich, less of it may be used. A mixture of poultry manure with stable manure will increase the strength of the latter, and it will go further in use. It would require a considerable portion of poultry droppings to double the value of mixed stable manure, certainly more than is often produced on the farm.

How Long is Milk Good for Butter?—"A Subscriber." The milk of a cow newly calved, not only contains more butter, but the butter exists in larger globules, and is more easily churned than afterwards. About five months after calving, the difference becomes appreciable in the churning, and after the cow becomes again in calf, there is often trouble in bringing the butter. The cream is not only small in quantity, but it is changed in character; the globules are very small, and exist as an emulsion with the milk, rather than as a separate part of it. Another reason for difficulty of bringing butter, is that when the cow has been milking for some time, the cream being less in quantity, has to be kept longer before a churning is gathered. Then in the souring of the milk, alcohol is formed by the decomposition of the sugar of milk; the alcohol forms an emulsion with the cream, and as this is beaten in the churn, it foams up and froths over, but makes no butter. When this happens, patience ceases to be a virtue, for it is useless; the cream might as well go into cakes or puddings, or to the pigs.

Sheep in Warm Climates.—"S. S. H.," Marshallton, Iowa. The Merino and its grades of our native sheep thrive well in warm climates. There are many localities in the United States where sheep can be pastured the year round, or with a very little help in winter. Texas, New Mexico, parts of Colorado, southern Kansas, Arkansas, the Gulf states, parts of Virginia, North Carolina, Georgia, and Tennessee, are excellent sheep grounds, especially for Merinos and their grades.

To Destroy "Everlasting."—"C. H. P.," Delaware Co., N. Y. The common weeds known as everlasting, as well as most of the weeds which trouble the farmer, are encouraged by keeping land in pasture. To plow up a piece of weedy grass land, sow buckwheat and then oats, sowing grass and clover again with the oats, and then pasturing the land, is about as good a plan as could be used to perpetuate the weeds. If the sod had been planted with corn, and the ground kept clean, and the next year or two years plowed again and put in potatoes or beans, being all the time kept free from weeds by hoeing or hand-pulling, the ground would be pretty well cleaned, and might then be sown to clover. The clover should not be pastured, but mowed once for hay, and once for seed. The sod might be plowed again for corn, and if the weeds were not destroyed, another crop of beans or roots should be taken. Few weeds will survive two or three well cultivated crops, and fewer still this process repeated.

Manufacturing Bone Fertilizers.—"P. C. T." Lee Co., Va. We cannot recommend farmers to manufacture their own superphosphates from bones. Having made an attempt to do this, although well acquainted with the dangerous character of the sulphuric acid employed, and having facilities for procuring it cheaply, we found the trouble, the loss from unavoidable accident with the acid, to tools, clothing, and hands, and the difficulty of completely neutralizing the acid, without rendering the phosphate insoluble, were such as to prevent any repetition of the attempt. Unless the bones are ground fine, the process is long and troublesome, and to grind them fine, requires costly machinery. The acid used is a most dangerous substance, and an accident might cost the loss of one or both eyes, or severe burns upon the body. To make it in small quantities costs more than it can be purchased for, and an inexperienced person can not tell when the process is perfectly performed. In drying the pasty product, there is danger of spoiling the value of it. The process is not described in any book except a costly technical work, which is only useful to a chemist.

Value of one Cow.—The history of the Short-horn cow, Duchess 66th, which was sold in 1853 at Earl Ducie's sale, in England, to Colonel Morris, of Fordham, for 700 guineas, or $3,675, is remarkable as showing the actual value of one good breeding animal. From this cow, which was calved in November, 1850, there may be traced in direct descent a number of animals which have sold for about $500,000. Let it be admitted that as much of this value as may be, is depending on the fancy of rich breeders, and is not the intrinsic value of the beef and milk produced, yet no one can help admitting that an immense value, estimated in these alone, has accrued to the world from this cow; and in proportion to this value may be estimated the profit to a breeder from any superior animal he may produce. A line of breeding animals is brought into existence, which spreads out fan-like, and diverges year by year wider and wider, until we can no longer reach the bounds of the beneficial influence. It is in this that lies the value of any good animal, and it is an unfair disparagement to confine its value to the weight of meat upon its carcass, or its produce in milk and butter. The breeder who produces a superior animal sets in motion an impulse which must in time spread and increase enormously, and far beyond computation.

How many Bricks for a Cistern.—"T. H.," Hamden, Conn. A cistern 10 feet in diameter, and 10 feet deep, will hold nearly 6,000 gallons. Such a cistern will require 2,000 bricks if set on their faces; if set upon their edges, about 1,100 will make the wall. The floor is not included, as that may be cemented. Set upon their faces, 6 bricks will make a square foot of wall. Set upon edge it only takes 3½ bricks.

Learning Farming from a Hired Man.—"W. C.," N. Y. A hired man would be a poor teacher for an employer who knew nothing about farming. For a young man who knows nothing of farming, but who wishes to learn, it would be a good plan to live one year with a good farmer and work as a hired man, paying his board as a compensation to the farmer for the trouble of teaching the business. This would be better in every way than to learn from a hired man. To find a farmer who makes a living out of the labor of his men without his own personal direction and help, is a difficult if not impossible thing to do.

Glanders.—"D. D. R.," Mahaska, Iowa. Glanders first appears as a discharge from the nostril, generally one only, of a thin transparent liquid of an acrid character and without smell. The lining membrane of the nostril is not red, but of a dull livid or purple color. The disease is distinguished by these symptoms from any other in which there is a discharge from the nose. This stage may last for a few weeks, or for a year, but it commences soon after inoculation from a diseased animal. Afterwards ulcers form on the lining membrane of the nose, the discharge is thick and yellow; the glands under the jaw swell, become hard, and appear as if fixed to the bone, the horse's coat stares; he weakens rapidly, sores appear on his body, and he dies, thoroughly emaciated. In the first stage the horse may work for many months without distress. It is believed by some veterinary surgeons that at this stage the disease is curable by the use of sulphite (not sulphate) of soda, in half ounce or ounce doses given twice every day. A prominent European surgeon states that he has cured seventy cases of glanders by this treatment.

THE ST. NICHOLAS CLOCK.

AN ACCURATE AND RELIABLE

THIRTY-HOUR CLOCK FOR $2.00.

It is a detached lever escapement time piece, of careful construction. QUALITY GUARANTEED. Novel, tasteful, and attractive in style, and in every respect an article of superior excellence.

It will Run in any Position.

The following commendatory notice from the *Ladies' Floral Cabinet*, Henry T. Williams, editor, is a sufficient endorsement: "We have specially tested it in this office for several weeks. It was received at first with great doubt, not thinking it possible that so cheap an article could be worth much. To our surprise it has proved as accurate as the best $200 watches, runs with the very best regularity, obeys the regulator immediately, and appears perfectly sensitive to its slightest change. It will run one to two days without re-winding, is very neat and pretty, and thus far has answered every purpose claimed for it, and been fully as accurate and reliable as any clock of twenty times its worth. We think it well worth the money." Sent by mail, post-paid, on receipt of price.

S. B. JEROME & CO., New Haven, Ct.

TO THE LADIES!!

BROWN'S FRENCH DRESSING

will make Ladies' and Children's Boots and Shoes that have become rough and red, and Ladies' Traveling Bags which look so old and rusty that they are ashamed to carry them, look just as good as new. It will not rub off or smut when wet. Softens the leather.

No lady will be without it after one trial. Beware of imitations and counterfeits. For sale everywhere.

B. F. BROWN & CO., Boston.

This man goes prepared for rain, because he has one of

LOVEJOY'S

Beautiful Weather Houses

in his house, which shows him when it will storm, and you can have one sent to your house prepaid, by sending $2.00 to

ALVAN L. LOVEJOY,
Proprietor and Manufacturer,
393 Washington St., Boston.

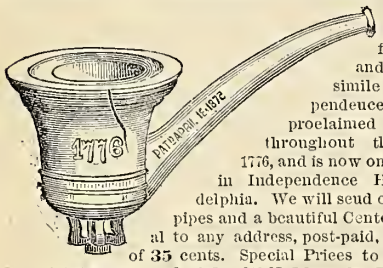
BUY SILVER-PLATED WARE

Of the Manufacturers at Wholesale Prices.

On receipt of one dollar we will send by return mail, post-paid, 6 tea-spoons and 3 tablespoons, silver-plated, or
6 table-forks and 1 butter knife, " " or
6 dessert knives, " "
Oval, Olive, or Medallion patterns.

ELECTRO PLATE CO., Northford, Ct.

Patent Centennial Bell Pipe.



This Pipe is a beautiful bronze, and is a facsimile of Independence Bell, which proclaimed Liberty throughout the land in 1776, and is now on exhibition in Independence Hall, Philadelphia. We will send one of these pipes and a beautiful Centennial Medal to any address, post-paid, on receipt of 35 cents. Special Prices to the Trade.

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This water-proof material, resembling fine leather, is for outside work (*no tar substances used*) and inside, instead of plaster. Felt carpetings, etc. Send for circular and samples.

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Patent Carpet Rag Looper and Button-hole Cutter Combined.

Looping Rags with ease and rapidity. Simple and Durable.

Samples by mail, 25 cts.; 3 for 60 cts.; 12 for $1.25. 64-page catalogue. Descriptive of the best Novelties, etc., free.

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THE ARION PIANO

Is absolutely the best piano manufactured in the United States. Write for our Illustrated Pamphlet before you buy a piano, and mention where you saw this notice.

Address **SIMPSON & CO.,** Sole Manufacturers,
No. 5 East 14th Street, New York.

SEWING MACHINE NEEDLES.—"Willcox & Gibbs," 75 cts., "Singers," 40 cts., all other leading machines, 50 cts. per dozen. Sent by mail, post-paid.
Address, H. A. CORNELL, Golden's Bridge, N. Y.

THE ROBBINS WASHER.

Patented by Henry R. Robbins, of Baltimore, Md.

Manufactured and Sold by GEO. D. BISSELL & CO., Naugatuck, Ct.

Every housekeeper is willing to admit that a *really good* washing machine would prove a priceless boon to all the households in the land: since it would save not only time and labor, but wear and tear of material; and would also prevent much of the annoyance and discomfort incident to "washing day."

The proprietors of the Robbins Washer claim that they are sending out a machine that will perfectly cleanse without injury the most delicate fabric. It is constructed upon an entirely new principle—that of *forcing water* by downward pressure through the clothes—thus softening and removing the dirt by one operation. By its use all *rubbing* or *friction* is avoided; this alone will effect a saving of many times its cost, to an ordinary family, in the course of a year. It can be used with any common wash-boiler; no wash-board needed; requires only from fifteen to twenty-five minutes to wash a boiler full of clothes—and leaves them, after rinsing, *clean and sweet* and free from streaks or stains. It is cheap, simple, easy to operate, never gets out of order, and *will last a life-time.* The PHILOSOPHY of the whole thing is fully explained in our TREATISE ON THE ART OF CLEANSING FABRICS, which we send *free* to any address upon application by letter or postal card. Every housekeeper should send for one.

Retail price of the machine—No. 1, family washer, $3.50; No. 2, small hotel size, $5.00; No. 3, steam washer, for Hotels, Hospitals, and Laundries, $25.00.—Sample machines of No. 1 and No. 2 washers sent to those desiring agencies @ $3.00 and $4.00 respectively.

WE WANT IMMEDIATELY active, energetic business men to act as General Agents to introduce the ROBBINS WASHER into every town in the United States. To the right sort of men liberal terms will be given.—Canvassers can make more money at selling the washer than at any other business. *Send for circulars*, giving full description, terms to agents, &c., &c. All orders must be accompanied with cash. Remit by check, registered letter, or money order to Geo. D. Bissell & Co., Naugatuck, Ct.

Read what the people say about the Robbins Washer.

EATONTOWN, N. J., Sept. 23d, 1875.

GEO. D. BISSELL & CO.: GENTS:—The machine came all O. K., and the lady who tried one, "pronounces them perfect." Yours, &c., FRANK FLOWER.

SALT LAKE CITY, Sept. 27th, 1875.

Messrs. GEO. D. BISSELL & CO.: We have tried the Little Washer, and it is pronounced a complete success.
M. CANNON, Box 77, Salt Lake City, Utah.

MERRIMAC MILLS, FAIRFIELD, JEFFERSON CO., IOWA, Sept. 29th, 1875.

Messrs. GEO. D. BISSELL & CO.: GENTLEMEN:—The Washer Received. Like it very much. We will order two or three dozen in a few days. Save us as large a territory as possible. Would like the State of Iowa if it would not be asking too much. Yours truly, CALEB BATES.

CENTRETON, NEW JERSEY, Oct. 4th, 1875.

Messrs. G. D. BISSELL & CO:—The Washer came all right, Sept. 29th. My wife has washed with it twice, and she is perfectly delighted with it. It takes out the dirt complete. Among over three thousand different patents on Washers, I am fully convinced that this excels all, in the perfection of its work, in the quickness of doing it, in cheapness, and in the durability of its construction. I am an ordained minister of the M. E. Church, although not at work in the active ministry.
Yours, JULIUS WILCOX, Centreton, Salem Co., N. J.

Office of EMPIRE LOOM WORKS, R. REYNOLDS' SONS, STOCKPORT, COL. CO., N. Y., Nov. 22d, 1875.

Messrs. GEO. D. BISSELL & CO.: GENTLEMEN:—The Robbins' Washer you sent me, has proved itself the greatest labor-saving auxiliary in the washing department of our household, we have ever used or seen. It fully realizes all you guarantee in your circular; and I shall recommend it wherever I can. Yours truly, R. BURNS REYNOLDS.

EATONTOWN, Nov. 27th, 1875.

Messrs. GEO. D. BISSELL & CO.: GENTS:—I am confident that if you would send your circulars, etc., giving full particulars, to the address of A. P. Flower, Esq., Spring Valley, Minnesota, you would secure a great market for your unrivaled machines. As Mr. F. (my cousin) is in the hardware business, (firm of Alley & Flower), he could sell a great many. I feel interested in spreading your little Washer in every section of the country. My wife would not part with the one we have for $500, if she could not procure another. It is certainly the only washer in existence that is of any account.
I am, Yours very truly, F. FLOWER.

The above are extracts from a few among hundreds of letters we have on file at our office. The originals will be cheerfully shown to all who may desire it. Don't fail to send for descriptive circular, terms to agents, &c., &c., to GEO. D. BISSELL & CO., Naugatuck, Ct.

Importer to Consumer Direct.

FIVE PROFITS SAVED.

Choice Tea at 50c. obtained by contracts with importers for their samples. Half-pound samples mailed on receipt of 25c. and 8c. postage. Send for circulars. Agents wanted.
THOMAS CHUTE & CO., 131 Water St., New York.
Address letters to P. O. Box 4019.

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Sold by all Dealers.

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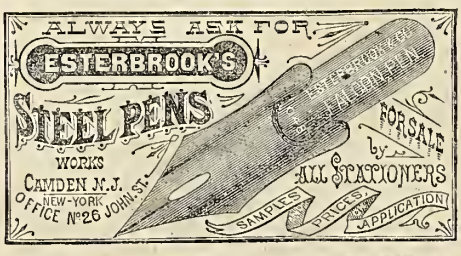
HENRY HOE, Sole Agent. JOSEPH GILLOTT & SONS



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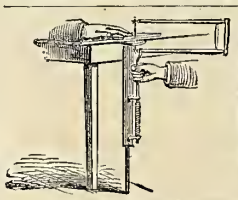
will thrive in the shade? Which on a light sandy soil? What varieties from the garden will furnish winter bloom in the house? and much else of interest to lovers of flowers in Root's Garden Manual. See adv. page 30.

TOOLS.

of all kinds for Farmers, Blacksmiths, Carpenters, and all classes of Mechanics. Illustrated Catalogues free to any address. GOODNOW & WIGHTMAN, 23 Cornhill, Boston, Mass.



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Of any and every kind. Send stamp for Catalogue. Address **Great Western Gun and Revolver Works, Pittsburgh, Pa.**

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Size 4 x 6 inside chase.
Self-inking. Price $14.

THE BEST MADE.

This new Press is thoroughly built, simple and strong. It has four screws in the back to regulate the impression. Two rollers pass entirely over the form twice at each impression, and a revolving ink disc insures good distribution. The operation is rapid, and for printing Cards, Tags &c, it cannot be equalled. LARGER SIZES $37 and $60.

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LOW PRICES!

10 YEARS CREDIT! SIX PER CENT INTEREST!

NO PAYMENT ON PRINCIPAL TILL FOURTH YEAR.

Read and Remember our Offers, open till July 1st, 1876.

Discount in Iowa of 20 per cent for cash. Discount in Nebraska of 20 per cent for improvements. Discount of 20 per cent to buyers on short credit. Premium of 20 per cent on cultivation of land. Free fare by the "Burlington Route" to buyers of Iowa Land. Half fare by "Burlington Route" in Illinois and Iowa, and free fare in Nebraska, to buyers of Nebraska Land. Half first-class fare by "Burlington Route" to families of buyers. Low freight on household goods and farming implements, from Chicago westward, by the "Burlington Route."

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☞ A fine country in which to combine **Farming** and **Stock Raising.** The **SOIL** is rich and easily cultivated; **CLIMATE** warm; **SEASONS** long; **TAXES** low; **EDUCATION FREE.**

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Sold at important stations on the Chicago, Burlington & Quincy Railroad, and cost of same refunded when land is bought.

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LAND COMMISSIONER, B. & M. R. R. R.

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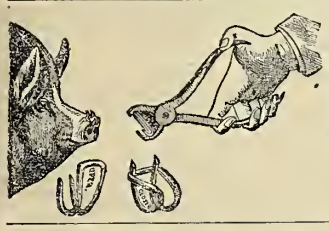
☞ Sectional Maps, showing lands unsold in Iowa, will be forwarded on receipt of thirty cents, and a similar map of unsold lands in Nebraska, for same price.



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The only Ring invented that will effectually prevent Hogs from Rooting. Being a Double Ring, and having no sharp points in the flesh, it does not cause irritation or soreness, as in other Rings. The smooth part of the wire being in the nose, it heals rapidly. One of our rings being equal to two or three of any other ring, makes this ring cheaper than the cheapest. Time and money saved in using the Champion. One operation, and the work is done.

Price of Hog Ringer, 75c. each; Coppered Rings, 50c. per 100; Tinned Hog Rings, 60c. per 100; Hog Holder, 75c. each.

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Breeder and Importer of thoroughbred Alderney and Ayrshire Cattle; Clydesdale Horses; Cotswold Sheep; Berkshire Swine, and Fancy Poultry. The Stock bred at Beacon Farm is imported, and from the best imported sources, and has won the unqualified admiration of the best judges. They have taken the first prizes at Provincial Shows, and at leading State and County Fairs in Canada and the United States.

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Full Blood Merino Sheep for Sale.—I have some **Rams and Ewes** to spare, of the purest pedigrees, out of *elite* or *chosen* SILESIAN or AUSTRIAN flocks. WILLIAM CHAMBERLAIN, Red Hook, Dutchess Co., N.Y.

Black Bass for stocking ponds—**Pekin Ducks, Bronze Turkeys,** descended from a pair weighing 62 lbs. **Jersey Cattle,** A. I. C. C. R., and Cotswolds, at low prices. Address W. CLIFT, Mystic Bridge, Ct.

JERSEYS.—During the past 10 years I have sold Jersey Cattle to many readers of the *Agriculturist*, and I believe with uniform satisfaction to purchasers. I offer stock at reasonable prices. G. W. FARLEE, Cresskill, N. J., one hour from New York.

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For sale in New Castle Co., Delaware. 210 acres. 1 mile from two stations. Elegant Buildings and Lawn. Land well improved; 50 a. Peaches; 3½ a. Apples; 8 a. Pears: all of the best varieties and in full bearing. Terms liberal. A very healthy location. Apply to G. W. INGRAM, R. E. Agent, Middletown, New Castle Co., Delaware.

250 MARYLAND FARMS, in Tracts from 30 to 300 acres. Near railroad and navigable Salt-water (with all its luxuries), in Talbot Co., Md. Climate mild and healthy. Titles good. New Pamphlet and Map showing *location*, free. Address C. E. SHANAHAN, Atty., Easton, Md.

FARMS Send for free **A** Catalogue and Maps of **R** Md. and Del. **M** Price list of farms **S** J. F. MANCHA, Easton, Md

2 FARMS (adjoining)—near Atchison, Kas. 80 a. each. Highly cultivated, &c.—rare bargains—$2,000 each—must be sold—for particulars write to A. W. WAGENHALS, (as above).

Also the Anderson Patent Pipe Safety Boilers, 2 to 100 Horse Powers. 69 lbs. steam from cold water in 15 minutes.

Small Portable Boiler, with Kipp's new Engine combined, and complete for all purposes—full 2-horse power, $275.00.

The best and most durable Boiler and Engine of this size ever sold. Price is low. Send for special Circulars.

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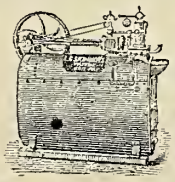

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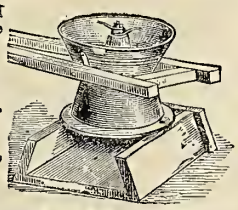
Beware of Imitations.

Address **SKINNER & WOOD, Erie, Pa.**

"Every Farmer and Stock Feeder should have one."



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Corn and Cob Crusher.

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Corn Shellers, Feed Cutters, Farm, School and Church Bells, Agricultural Boilers, Wood Sawing Machines, Tread and Sweep Powers, etc.

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FOR EACH SUBSCRIBER.

We offer to subscribers, in connection with THE EVENING POST, the following useful articles:

A DETACHED LEVER CLOCK, which sells for $2.50 at retail, with the Weekly Evening Post for $2.75, or with the Semi-Weekly for $4.25.

"A good time-piece, of simple, yet careful construction."

THE ST. GERMAIN or STUDENT LAMP. (C. A. Kleeman's patent.) Large size (retail $7.00) with Weekly, $5.75; with Semi-Weekly, $7.25.

"The light is steady and bright, and therefore the eyes are not disagreeably affected, as is the case in reading by gas-light or the light of other lamps."

THE UTILITY ADJUSTABLE TABLE (retail, $8.00), with Weekly, $5.50; with Semi-Weekly, $8.00.

"This table may be raised or lowered in hight to suit any person or purpose, and can be folded in a moment for packing away."

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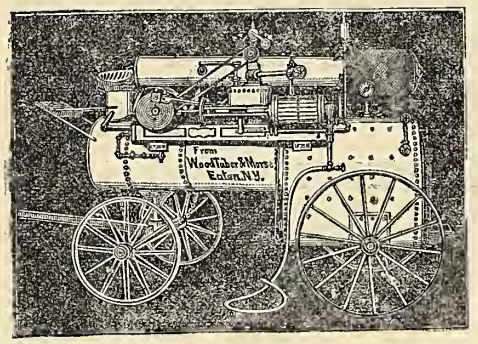

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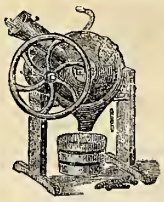

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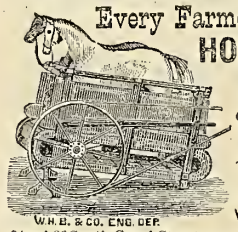

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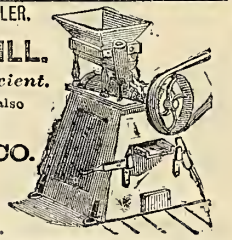

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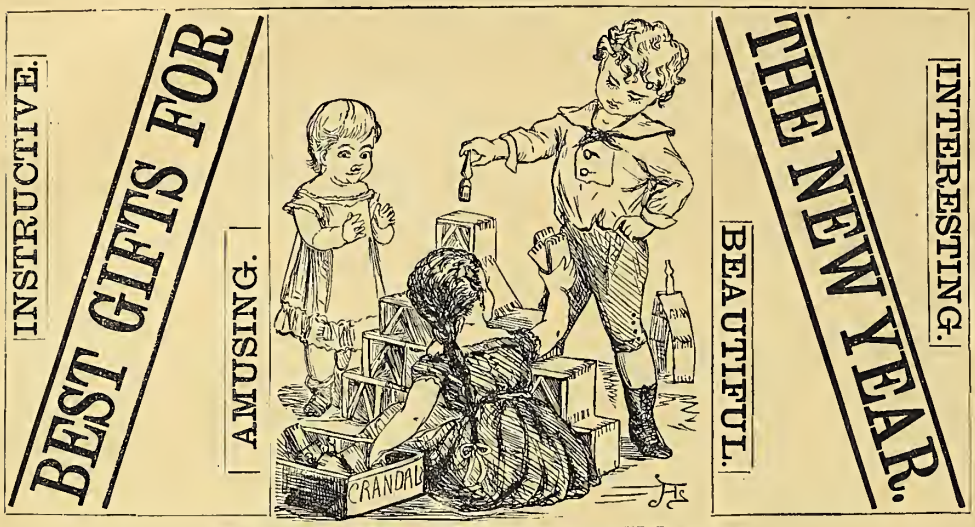

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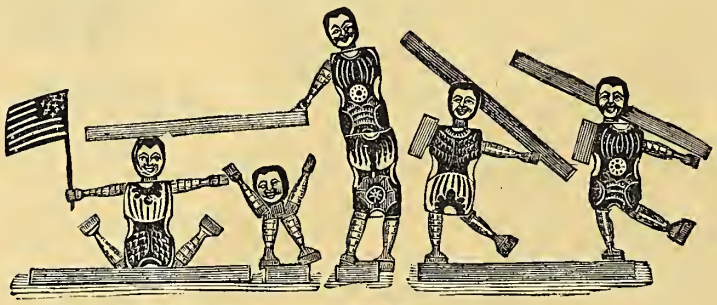

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FEBRUARY, 1876.

AMERICAN AGRICULTURIST.

FOR THE FARM, GARDEN & HOUSEHOLD.

Vol. XXXV. Number 2.

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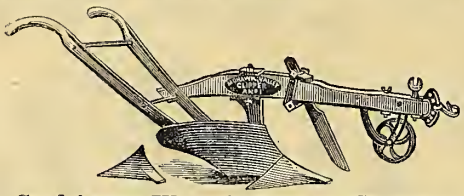

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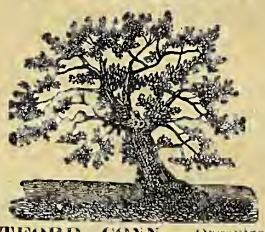

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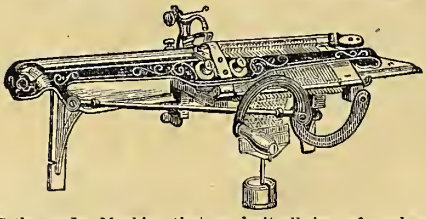

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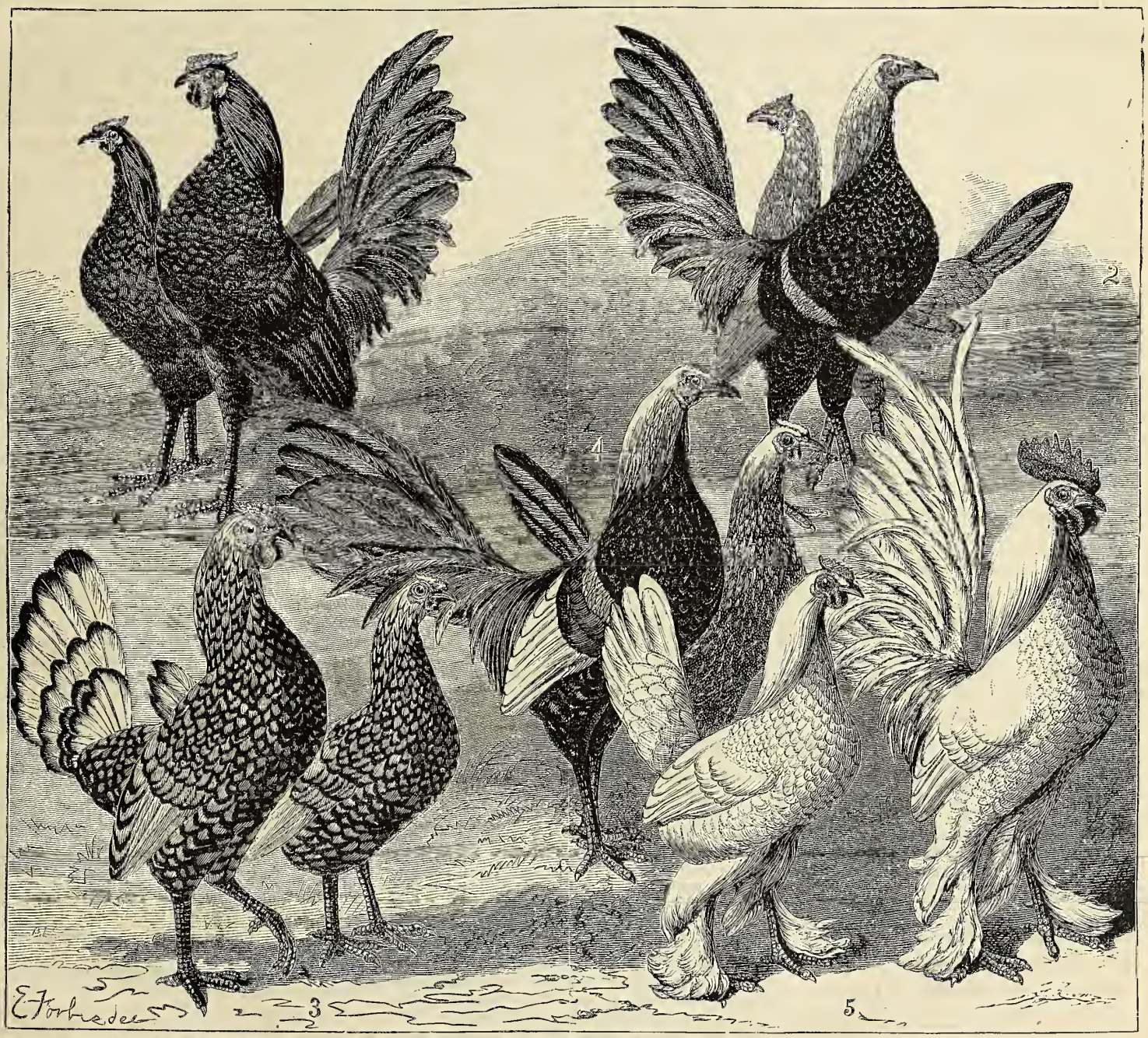

FIRST PREMIUM BANTAMS AT THE LONG ISLAND POULTRY EXHIBITION.—*Drawn and Engraved for the American Agriculturist.*

One who keeps fowls for profit, will doubtless look upon the Bantam with disrespect, if not with some degree of aversion. This is not to be wondered at, because their small size renders them insignificant as flesh or egg producers, and their pugnacity and officiousness in the poultry yard makes them a nuisance amongst other fowls. But where pleasure, and not profit, is the main pursuit of the poultry breeder, the Bantam occupies a very conspicuous place. As a pet for young people, it is also in great request, and it is much admired by them for its neat, handsome figure, its sprightliness, its activity and bravery. A Bantam hen and its brood of tiny chicks is a possession greatly desired and much treasured by the young people of the farm, however the older ones may dread their appearance in the garden or amongst the flowers. At the poultry show this class of birds is very attractive, and they are much sought after. At the recent exhibition of the Long Island Poultry Association, previously referred to, there was shown the best collection of Bantams we had so far seen. The above engraving contains portraits taken from life, of some of the rarest varieties of these birds, which all took first premiums. The pair numbered 1 in the picture, are the Black Bantams, owned by Smith & Bros., of Stony Brook, L. I.; No. 2 are Black Breasted Red Games, owned by D. Ingraham, Astoria, L. I.; No. 3, the Golden Seabrights, of W. H. Pullis, Bay Shore, L. I.; No. 4, the Yellow Duckwing Games, belonging to Thomas Smith, Stony Brook, L. I., and No. 5, White-booted Bantams, owned by H. S. Magrane, Newark, N. J.

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Vines of the South of France.—P Dupuy, Alachua Co., Fla., writes to know what varieties of grapes are grown in the department of La Gironde, France, for wine, and if they will succeed with him. There is no one variety grown in any part of France, but each vineyard has that best suited to it, or several varieties, to ripen in succession. The number of kinds is very large, but the popular grape is the *Pinot* in some of its many sub-varieties, for there are a dozen or more *Pinots*, from white to black. Our correspondent has first to ascertain if any European grape will succeed in his locality, and then to find out by experiment, which are best suited to it. Unfortunately there is very little experience for his guidance, and if he would undertake to cultivate the wine grapes of the south of France, he must be a pioneer, and experiment. Some of the table grapes, such as Black Hamburgh and others, have been cultivated with success.

Calendar for February.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n sets.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	T	7 14	5 14	11 59	7 10	5 18	11 56	7 6	5 22	11 53
2	W	7 13	5 15	morn	7 9	5 19	morn	7 5	5 23	morn
3	T	7 11	5 16	1 12	7 7	5 20	1 8	7 4	5 24	0 3
4	F	7 10	5 18	2 29	7 6	5 22	2 23	7 3	5 25	2 17
5	S	7 9	5 19	3 47	7 5	5 23	3 40	7 2	5 26	3 33
6	S	7 8	5 20	4 56	7 4	5 24	4 49	7 1	5 27	4 41
7	M	7 7	5 22	5 57	7 3	5 25	5 50	7 0	5 28	5 43
8	T	7 6	5 23	6 41	7 2	5 26	6 35	6 59	5 29	6 29
9	W	7 5	5 25	rises	7 1	5 28	rises	6 58	5 31	rises
10	T	7 4	5 26	6 45	7 0	5 29	6 47	6 57	5 32	6 49
11	F	7 2	5 27	7 54	6 59	5 30	7 54	6 56	5 33	7 55
12	S	7 1	5 29	9 3	6 58	5 31	9 1	6 55	5 34	9 1
13	S	7 0	5 30	10 10	6 57	5 32	10 8	6 54	5 35	10 6
14	M	6 58	5 31	11 17	6 56	5 33	11 13	6 53	5 36	11 10
15	T	6 57	5 33	morn	6 54	5 34	morn	6 52	5 38	morn
16	W	6 55	5 34	0 24	6 53	5 36	0 17	6 50	5 39	0 3
17	T	6 54	5 35	1 26	6 51	5 37	1 21	6 49	5 40	1 15
18	F	6 52	5 36	2 34	6 50	5 38	2 27	6 48	5 41	2 20
19	S	6 51	5 38	3 34	6 49	5 40	3 26	6 47	5 42	3 18
20	S	6 50	5 39	4 26	6 48	5 41	4 13	6 46	5 43	4 10
21	M	6 48	5 41	5 11	6 46	5 43	5 4	6 44	5 45	4 57
22	T	6 47	5 42	5 43	6 45	5 44	5 37	6 43	5 46	5 31
23	W	6 45	5 43	6 13	6 43	5 45	6 8	6 41	5 47	6 3
24	T	6 44	5 45	6 38	6 42	5 47	5 35	6 40	5 48	6 31
25	F	6 42	5 46	sets	6 40	5 48	sets	6 38	5 49	sets.
26	S	6 40	5 47	7 29	6 38	5 49	7 29	6 37	5 50	7 29
27	S	6 38	5 48	8 41	6 37	5 50	8 40	6 35	5 51	8 38
28	M	6 37	5 49	9 52	6 35	5 51	9 49	6 34	5 52	9 47
29	T	6 36	5 50	11 3	6 34	5 52	11 1	6 33	5 53	10 57

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
1st Quart	2	9 9 ev.	8 57 ev.	8 45 ev.	8 33 ev.	8 3 ev.
Full M'n	9	1 3 ev.	0 51 ev.	0 39 ev.	0 27 ev.	11 57 mo.
3d Quart.	16	0 12 17h	12 0 ev.	11 48 ev.	11 36 ev.	11 6 ev.
New M'n	25	1 36 ev.	1 24 ev.	1 12 ev.	1 0 ev.	0 30 ev.

AMERICAN AGRICULTURIST.

NEW YORK, FEBRUARY, 1876.

In modern farming there can not be a fair profit upon the capital invested, unless there is skillful management, and such a forecast of business as will make it necessary to pursue a certain steady course of cropping. This comes from the necessities of the case. Corn and grass, wheat, barley, roots, or oats, follow each other on a well ordered farm, or all is disorder and confusion. But, unfortunately, all farms are not well ordered, and there is a pressing need which actually prevents order on some farms, just as poverty forces makeshifts in some households. Something like this obliges the planter to grow cotton year after year, when he knows he is losing money by it. He loses less by making a crop, than by letting his fields go untilled, and he plants again, hoping against hope for a change in the market, which will bring him profit. But this method can not last always. Like growing wheat every year after year, in California, it must stop some day, just as the continuous growing of wheat in the Genessee valley came to an end. What is to be done? It is difficult to answer. If there were such a thorough organization among farmers, as there is of coal miners or cotton spinners, particular products might be reduced in quantity, to relieve the over-stocked markets, which now can take neither our cotton nor our wheat at paying prices. A farmer can not, like a factory or a coal-mine, run on "short time"; but he can do what amounts to the same thing, he can go on short acres; he can plant and sow less, and by spending less and producing less, get as much money for less produce. He will thus gain at one end what he could not reach at the other. That some such arrangement or combination is needed, the present condition of the two greatest markets in the world, those of cotton and wheat, show most conclusively.

Hints about Work.

The Cotton Crop.—It is important to consider the condition of the cotton markets, while there is time to change the plans for planting. Oats may yet be sown in the southern states, and this is the time to prepare the corn and potato ground. If it is thought desirable to plant less cotton than usual, this point must be decided now. It is certain that with a larger crop than is wanted, not only the surplus, but the whole supply of cotton falls in price, and the planter loses money. Had a million less bales of cotton been grown, or had they been burned, the three millions left would have sold last year, for more money than was received for the whole crop of four million bales.

The Wheat Crop.—The prospects for this crop are very doubtful at the present time. The latest advices from England, report 30 per cent less wheat in the market than last year, with only 4½ per cent increase in price, and rates are still on the decline. If it were not that a large portion of our wheat has been held back, prices would have been much lower. What shall the grower of spring wheat do in this case? The Minnesota, Iowa, or Nebraska farmer must grow spring wheat or stop business, as the market for barley, oats, and corn is as easily over-stocked as that for wheat. This is the misfortune of his position as a purveyor to a foreign nation, which may not want his goods, and as a farmer in a state where almost every other man is a farmer, and where there are few or no manufacturing towns, in which he can find a home market. To remedy this, time, and the growth of other industries are needed. We can see no other help for it. Where corn can be grown readily and turned into pork for exportation, the experience of the past two years has been in favor of this crop.

Out-door Work.—There is enough of this to keep farmers busy everywhere. Gathering materials for manure, making composts of coarse materials, with cotton-seed and superphosphates for corn and cotton, top-dressing grass fields and for encouraging the growth of native pastures, plowing, fencing, and cleaning out water-courses, will employ southern farmers. At the north, there is fire-wood to cut and haul, rails to split, fence posts to hew and bore, ice to cut and put away, the smoke-house to look to, manure to turn over, and many other things to be done, that will make a quiet evening's rest over an instructive book or paper, very acceptable. Every farm has its special needs that require providing for, and when the February snows and sleets make out-door work impossible, but few hours need be wasted in-doors.

Roads.—There is as much need to keep roads in good repair during the snowy season, as in summer. Bare spots that are swept by the wind, should be packed over with snow when the sun is warm and the snow soft. It may then be beaten down, so that it will not drift away. "Cradle-holes," the "thank'ee-marms" of New England, may be repaired by laying brush across the hollow, and covering it with snow, which should be well trampled down. Where the roads are muddy, the best way is to temporarily repair them by filling the holes with brush, or by laying brush across the soft spots. It is useless to repair roads with earth or stone while they are wet.

Working Cattle.—Oxen should be well fed, and well carded every day, to bring them into good condition for spring work. A weak animal will soon give out under the first hot suns of spring. *Work the bulls.* A bull may be made to at least earn his feed. He will be more tractable and more trustworthy for it. Several plans for working bulls have been given from time to time. A bull had better do much of the hauling and odd jobs of the farm, than to be tied up to fret and become savage.

Cows.—In-coming cows should be treated with great care. The dry feed will have rendered them very liable to inflammatory diseases. Garget, milk-fever, abortion, and such troubles, affect well fed cows more than others. The blood needs cooling by laxative food. One quart of oil-cake meal, mixed with bran scalded, and given as a drink once a day, will be useful. No corn should be given for several weeks before calving. Bran or middlings will be more cooling and healthful, but if good hay is given, very little grain of any kind will be needed. Caution now will prevent trouble hereafter. When the calf is expected, the cow should be turned into a loose stall, or into a quiet stable alone.

Horses and Colts.—If cuts are found upon sharp shod horses, about the feet or pasterns, wash the wounds with warm soap and water, and then apply a pinch of salt, or a little compound tincture of benzoin, which will cause them to heal rapidly.

Neglect of this precaution may cause a quittor or some other trouble, which will break out by-and-by, when the horse is needed for spring work. Sharp shod horses should not be permitted to play together in a yard, or with other animals. A kick from a playful horse may cause serious damage. Colts and yearlings should be tied in their stalls and taught proper discipline. They should be handled gently, and fed well and regularly. Give young stock of all kinds the best of food.

Sheep.—When rough, shreddy wool appears in the fleeces, or the wool drops off in locks, the sheep are not healthy, or the food has been too dry and heating. Stop the corn-meal, and give some linseed oil-cake meal; a few potatoes will be useful if roots are not to be had. Give salt frequently and freely. Keep nursing ewes by themselves, and give scalded bran or oatmeal daily. Sugar beets, or potatoes, sliced and sprinkled with a quart of middlings or bran, for each ewe, will produce abundant and rich milk. Keep lambs where they will have plenty of sunshine. Pick off ticks by hand; this may be done very rapidly by using a pair of small, sharp-pointed scissors; part the wool, and when a tick is found clip it in two.

Swine.—Sows may now be turned to the boar for pigs in June. Sows expected to pig soon, should have warm pens, with cut straw or chaff for bedding. Rails fixed around the bottom of the pens, six inches above the floor, and the same from the wall, will protect the young pigs from being crushed. In the south pigs need no more shelter than a rough roof in a wood lot. There is no better place for pigs than a small piece of woods well fenced, where they may run and make their own beds of leaves or earth. Straw beds, and especially a bed of manure, will cause irritation of the skin, if not skin diseases, and encourage parasites.

Sundry Matters.—The small things which need attention now, become numerous and pressing. The first thing that should be done, if it has not already been done, is to procure an account-book, and begin to keep accounts with the crops and stock. Another *very important* thing is to renew the subscription to the paper, whether it be the *American Agriculturist* or any other. The small amount of money required for this, can not be so well laid out in any other manner whatever. The wagons and carts need painting or repairing; the plows to be overhauled; harrow teeth pointed; seed to be selected or procured; harness to be repaired and cleaned; the thrashing machine and horse-power to be cleaned and oiled, and many other small but really important matters, will now need attention. These should be looked for with a sharp eye, "and when found, make a note of," or let them be attended to at once.

Work in the Horticultural Departments.

Advantage must be taken of all mild winter days to forward the spring work as fast as possible. There are always some little jobs which, unless done now, will be left undone in the hurry of spring work. Have everything around the house and out-buildings kept in a neat and orderly manner, and all rubbish removed whenever the ground is clear of snow. Provide absorbents for the manure from the stables and hennery, and see that the manure is kept both from overheating and from freezing.

Orchard and Nursery.

The full notes given under this head last month, will be in season now.

Insects.—During the mild days of the present month, the canker worms may make their appearance. The females cannot fly, but must crawl up the trunks. Their ascent is best prevented by the use of strips of paper coated with tar or printers' ink, and placed around the trunks; the tar or ink must be renewed whenever it becomes dry, or the dead insects bridge it over. Tent caterpillars' eggs are deposited in little rings near the ends of the twigs, and may be readily seen. A few hours or days even, spent in gathering and burning these eggs now, will save a great deal of labor in killing the caterpillars after they are hatched.

Varieties.—In planting new orchards for profit, select such varieties as are in demand, or if for family use, such as will give a good succession from early summer to late winter. Order trees for spring planting at once. If trees arrive in a frozen condition, put them in a cool place until thawed.

Cions.—Cut at any time in mild weather, label and bury in sawdust in sand or earth.

Fruit Garden.

Grape-Vines.—Make use of mild days for pruning those vines which were left during the hurry of the fall work, and apply ashes or ground bones between the rows. Save the wood for cuttings.

Dwarf Trees.—The present month is a good time to prune such trees as need it, as the shape and general direction of the branches is readily seen now that the leaves are off. Where the branches touch, and the bark is injured by rubbing, one of the branches should be cut out, or the two may be spread apart and tied so that they will not interfere.

Labels, Grafting-wax, etc.—Have ready all articles needed for use in the spring. Strips of calico or thin muslin loosely rolled upon a stick and dipped in melted grafting-wax are the most convenient forms in which to use the wax.

Currants and Gooseberries.—Prune any time before the buds swell.

Kitchen Garden.

But little can be done out of doors in the northern states at this season; see that everything is put in readiness for immediate use when wanted.

Seeds.—All which have to be bought should be ordered now. Those saved on the place should be sifted or otherwise cleaned and made ready for use. All old and doubtful seeds, especially those of parsnip, carrot, onion, and such as cannot be relied upon after the first year, should be burned. Have every parcel labelled with the date on the bags. Never trust to memory with seeds; when in doubt, get fresh ones.

Novelties are offered every year; these generally come with the claims of the European dealers that they are superior to the old standard sorts, but 9 out of 10 of them are seldom heard of after the first season. Trials of these novelties on a small scale are interesting, and once in a while we find a good thing, but never depend upon novelties for a crop.

Hot-beds.—The time to start these will depend upon the locality. Next month will be early enough north of Virginia. Six weeks before it will be safe to set out the plants, is the proper time. Store the horse manure where it will not get too wet, and turn it occasionally.

Cold Frames.—Remove the sashes entirely on mild days, and on cool days raise them at the back. Keep the plants in them as dormant as possible.

Root Cellars.—The past two months were very bad for preserving vegetables, as the weather was so warm that even with the doors and windows open, it has been scarcely possible to keep them from growing. When the doors are open, see that the roots are well covered to keep them from the light and from drying.

Tools.—Paint and put in order for use. Give unpainted wood-work a coat of crude petroleum to fill pores, so that moisture cannot enter.

Flower Garden and Lawn.

Generally only preparatory work can be done. If stable manure is to be applied to the lawn, it should be so thoroughly fined that no weed seeds remain. It is better to use stable manure elsewhere, and apply bone, ashes, or other fertilizers here. It is easy to bring in weeds, but very difficult to get rid of them.... If any changes are to be made, new paths or beds, or transplanting of trees, have the work all planned out before-hand. Those who undertake ribbon planting or massing, should well consider the effect they wish to produce, and the materials for carrying it out. English examples of bedding are of no use here, as the plants serviceable for them are often quite worthless for us.

Greenhouse and Window Plants.

Plants in the greenhouse and windows should now be at their best.

Ventilation needs attention, especially on warm, clear days; changes are so sudden that this matter needs careful watching. Window plants need a supply of fresh air, but a current of cold air should not blow directly upon them.

Fires in the greenhouse now need special care; be ready for sudden changes.

Fumigation.—Give the greenhouse a thorough fumigation once or twice a week, and syringe the plants overhead the next day.

Bulbs.—Bring pots of hyacinths, narcissus, etc., from the cellar, to keep up a succession of flowers.

Annuals.—Sow seeds of Mignonette, Sweet Alyssum, Candytuft, and others, for early flowering.

Camellias.—Keep cool and syringe the foliage often, but do not wet the flowers.

Cuttings.—Preparation must be made for the needs of the garden by propagating Verbenas, Geraniums, and other bedding plants. If the temperature of the sand in the cutting bench or box is a few degrees higher than that of the air of the house, they will root rapidly.

Horticultural Notes for the Southern States.

The notes in January were intended to apply to the work for both that month and the present.

The Orchard may still have fertilizers applied; the trees pruned; the rough bark of old trunks scraped, and insects' eggs destroyed. If new trees are to be set, the soil should be manured and plowed, and made ready to plant the trees as soon as received.

Kitchen Garden.—Hardy vegetables generally may be sown, to follow those put in last month, and some of the more tender things, such as beans, may be risked; if no frost comes there is a decided gain, and if they are cut down, be ready to replant at once; the same may be said of squashes and melons, and others of that family. The time experience has shown to be the proper one in which to plant corn, will be safe for plants or seeds of tender vegetables. Sow sweet corn. Hot-beds will need airing; sow in them egg-plants and peppers, and tomatoes if not already done. Where tomatoes are large enough, transplant to another bed under glass. Transplant cabbages, lettuce, and other plants wintered in frames or otherwise.

Flower-Garden.—Success with roses depends largely on pruning; see last month's notes on these and other shrubs; sow seeds of hardy annuals, and propagate bedding plants. The heat of the sun will now demand close attention to ventilating greenhouses. Plants to be set out should be put into frames to harden off.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending January 13, 1876, and for the corresponding month last year; also for the year ending Dec. 31, 1875:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th	332,000	735,000	1,017,000	39,000	231,000	593,000
26 d's *last* m'th	389,000	3,115,000	1,904,000	42,000	207,000	796,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th	393,000	2,814,000	1,871,000	47,000	284,000	1,918,000
26 d's *last* m'th	401,000	3,769,000	1,886,000	74,000	502,000	1,812,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 1876	332,000	735,000	1,017,000	39,000	231,000	593,000
23 days 1875	324,000	459,000	1,617,000	13,800	57,000	407,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 1876	393,000	2,814,000	1,871,000	47,000	284,000	1,918,000
23 days 1875	291,000	2,911,000	1,918,000	34,000	251,000	2,105,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,300	307,438
Dec. 7, 1875..	5,878,036	816,962	99,908	305,961	1,252,005	258,364
Nov. 8, 1875..	3,219,457	1,112,998	79,355	277,400	815,591	249,986
Oct. 11, 1875..	2,382,502	1,682,246	10,910	21,688	439,693	261,428
May 11, 1875..	969,804	1,542,924	16,124	16,537	515,209	229,655
Jan. 11, 1875..	3,675,122	1,049,900	50,889	191,470	877,014	145,647
Nov. 9, 1874..	3,680,141	1,727,510	19,123	117,185	794,722	135,882

4. *Receipts at head of tide-water at Albany each season to Dec. 1.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.
1875	113,600	21,335,200	8,581,800	250,900	3,833,600	3,105,300
1874	165,200	23,791,500	17,723,200	337,600	3,428,400	3,584,500
1873	153,500	22,761,700	18,552,200	950,260	2,153,300	3,385,900
1872	137,300	11,349,100	29,928,700	474,600	4,548,600	5,696,000
1871	290,700	21,313,400	20,042,300	1,107,900	3,839,400	6,639,400
1870	430,400	17,124,700	4,805,100	587,500	3,984,700	6,167,300

5. *Receipts of Breadstuffs in New York in each of the last seven years:*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.
1875	3,910,272	34,214,736	22,485,707	301,654	4,707,346	10,636,077
1874	4,017,207	41,817,215	29,329,000	592,111	2,776,025	10,792,919
1873	3,546,68	33,559,870	24,589,345	992,447	2,448,526	11,235,420
1872	3,030,771	16,229,418	25,292,156	491,563	5,117,351	12,486,348
1871	3,649,045	26,518,360	27,108,156	1,055,621	3,869,123	12,516,966
1870	4,143,993	24,083,742	9,143,478	550,169	5,020,718	9,626,606
1869	3,535,716	23,813,652	11,666,784	357,803	3,007,958	8,747,322

6. *Exports from New York, Jan. 1 to Dec. 31.*

	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
1875	1,954,180	26,792,693	12,938,740	206,898	1,505	138,752
1874	2,177,608	31,791,249	19,000,995	641,661	3,560	122,528
1873	1,655,331	27,801,829	15,587,527	1,009,148	19,376	49,710
1872	1,179,050	13,144,956	27,864,000	668,547	22,656	31,480
1871	1,659,755	21,968,643	13,046,570	525,772	98,745	47,310
1870	1,950,234	18,446,035	487,792	92,431	——	28,085
1869	1,582,211	18,240,586	1,637,586	142,542	——	49,393

7. *Comparative Stock of Flour in New York, Jan. 1:*

	1873.	1874.	1875.	1876.
Western and State Flour	322,124	244,412	261,769	433,310
Canada Flour	1,800	1,050	100	——
Southern Flour	36,700	24,289	15,320	16,200
California Flour	3,000	——	250	——
Grand total, bbls.	363,624	260,751	277,439	449,510

8. *Comparative Stock of Grain in New York, Jan. 1:*

	1873.	1874.	1875.	1876.
Wheat, bushels	1,996,984	1,258,600	4,600,711	6,371,296
Corn, bushels	6,125,803	1,272,500	1,146,108	591,690
Rye, bushels	110,854	14,630	114,899	115,607
Barley, bushels	1,211,176	194,100	561,951	513,596
Oats, bushels	1,765,399	471,600	1,283,464	1,321,587
Malt, bushels	258,402	26,530	182,775	381,471
Peas, bushels	9,292	12,470	15,139	6,650

9. *Exports from New York, Jan. 1, to Jan. 12.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Peas. bush.
1876.	71,713	521,558	453,833	2,840	——	6,183	32,093
1875.	67,408	732,422	480,372	——	——	4,719	5,095

CURRENT WHOLESALE PRICES.

	Dec. 13.	Jan. 13.
PRICE OF GOLD	114 3-8	112 7-8
FLOUR—Super to Extra State	$4 40 @ 5 85	$4 20 @ 5 85
Super to Extra Southern	4 40 @ 8 50	4 20 @ 8 50
Extra Western	4 85 @ 8 50	4 85 @ 9 50
Extra Genesee	5 85 @ 7 00	5 75 @ 6 75
Superfine Western	4 40 @ 4 75	4 20 @ 4 65
RYE FLOUR	4 10 @ 5 35	4 10 @ 5 40
CORN-MEAL	3 15 @ 4 00	3 00 @ 3 75
BUCKWHEAT FLOUR, ℔ 100 lbs	2 15 @ 2 65	1 90 @ 2 30
WHEAT—All kinds of White	1 30 @ 1 50	1 30 @ 1 52½
All kinds of Red and Amber	95 @ 1 40	95 @ 1 45
CORN—Yellow	68 @ 75	63 @ 73
Mixed	62 @ 75	55 @ 73
White	67 @ 76	64 @ 73
OATS—Western	43 @ 53	44 @ 52
State	45 @ 53	45 @ 52½
RYE	85 @ 95	88 @ 97
BARLEY	85 @ 1 35	80 @ 1 35
BUCKWHEAT, ℔ bush	65 @ 67	58 @ 60
HAY—Bale, ℔ 100 lbs	70 @ 1 15	75 @ 1 12½
STRAW, ℔ 100 lbs	55 @ 1 00	60 @ 1 20
COTTON—Middlings, ℔ lb	13 @ 13¼	13¼@ 13⅜
HOPS—Crop of 1875, ℔ lb	10 @ 15	10 @ 15
FEATHERS—Live Geese, ℔ lb	35 @ 55	35 @ 58
SEED—Clover, ℔ lb	12½@ 13	13 @ 13⅜
Timothy, ℔ bushel	2 30 @ 2 80	2 40 @ 3 00
Flax, ℔ bushel	1 65 @ 1 70	1 65 @ 1 70
SUGAR—Refi'g & Grocery ℔ lb	6¾@ 9¼	6¾@ 9⅜
MOLASSES, Cuba, ℔ gal	28 @ 38	25 @ 38
New Orleans, new crop, ℔ gal	54 @ 64	45 @ 62
COFFEE—Rio (Gold)	18 @ 20½	16¼@ 19
TOBACCO, Kentucky, &c., ℔ lb	6 @ 25	6 @ 25
Seed Leaf, ℔ lb	6 @ 25	6 @ 25
WOOL—Domestic Fleece, ℔ lb	28 @ 62	28 @ 60
Domestic, pulled, ℔ lb	27 @ 50	26 @ 50
California, clip	14 @ 33	14 @ 33
TALLOW, ℔ lb	9¾@ 10	9 @ 9⅝
OIL-CAKE—℔ ton	42 50 @46 50	41 50 @45 50
PORK—Mess, ℔ barrel	21 75 @ —	20 75 @21 00
Prime Mess, ℔ barrel	19 50 @22 00	19 00 @19 50
BEEF—Plain mess	10 50 @11 50	10 00 @11 50
LARD, in tres. & barrels, ℔ lb	12½@ 13	12½@ 13¼
BUTTER—State, ℔ lb	24 @ 36	20 @ 35
Western, ℔ lb	14 @ 34	14 @ 33
CHEESE	4 @ 13¼	4 @ 13¼
BEANS—℔ bushel	1 30 @ 2 25	50 @ 1 95
PEAS—Canada, free, ℔ bu	1 18 @ 1 22	1 20 @ 1 25
EGGS—Fresh, ℔ dozen	28 @ 32	27 @ 32
POULTRY—Fowls	9 @ 18	7 @ 19
Turkeys—℔ lb	10 @ 18	12 @ 19
Geese, ℔ pair	1 25 @ 2 00	1 25 @ 2 50
Geese, ℔ lb	8 @ 13	6 @ 14
Ducks, ℔ pair	55 @ 80	55 @ 1 25
Ducks, ℔ lb	8 @ 16	9 @ 18
GROUSE, ℔ pair	80 @ 1 25	40 @ 90
PARTRIDGE, ℔ pair	50 @ 1 00	40 @ 70
DUCKS, Wild, ℔ pair	30 @ 1 25	30 @ 1 50
QUAIL, trapped, ℔ dozen	1 40 @ 2 50	75 @ 2 25
HARES, ℔ pair	60 @ 75	20 @ 30
RABBITS, ℔ pair	40 @ 50	20 @ 30
VENSION, ℔ lb	11½@ 18	7 @ 16
TURNIPS ℔ bbl	50 @ 75	75 @ 1 00
CABBAGES—℔ 100	2 00 @ 5 00	3 00 @ 7 00
ONIONS—℔ bbl	1 00 @ 2 50	1 25 @ 3 25
POTATOES—℔ bbl	65 @ 1 75	75 @ 1 75
SWEET POTATOES—℔ bbl	1 25 @ 2 25	1 00 @ 2 75
BROOM-CORN	— @ —	4 @ 11
PEARS, per box	3 50 @ 4 00	4 00 @ 6 00
GRAPES, ℔ lb	3 @ 7	2 @ 8
APPLES—℔ barrel	1 75 @ 3 00	1 75 @ 3 25
CRANBERRIES—℔ bbl	7 50 @ 9 75	7 60 @10 25
SQUASH, ℔ bbl	— @ —	50 @ 1 25
CAULIFLOWER, per bbl.	2 00 @ 6 00	1 50 @10 00

Gold has been up to 114½, and down to 112⅜, closing Jan. 13th at 112⅞, as against 114⅜ on Dec. 12th..... A more active market has been reported for the leading kinds of domestic Produce. Breadstuffs have been in good request, especially toward the close, under a free export call, chiefly for Flour, Spring Wheat, and Corn, with values winding up more favorable to sellers. An unusually liberal proportion of the Flour solely for export has been recently of City Mill product, mainly for the West Indies and South America. Barley closed heavy, and Malt difficult to market. The mild weather has been decidedly against dealings in Buckwheat, either Grain or Flour, and prices have been much depressed....The New York Inspection and Grading of Grain is now in operation.....Provisions and Cotton have been in fair demand, but variable as to values....Wool has been quiet but steady. Manufacturers have been purchasing with reserve....Hops have been quite active, with the demand largely from export buyers, closing firm for the better grades, which have been in most request....Clover Seed has been sought after for export, and quoted higher; State in most favor with buyers. Other grass Seeds dull ... Hay and Straw strong in price, but at the close less active.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.	Tot'l.
Dec. 20	8,122	76	795	24,334	25,922	59,252
Dec. 27	6,012	59	785	17,254	23,638	47,748
Jan. 3	5,958	28	704	14,938	19,483	36,611
Jan. 10	7,393	103	905	19,316	21,430	49,667
Total for 4 Weeks	27,485	269	3,189	76,342	85,973	193,258
do. *for prev. 4 Weeks*	35,205	372	4,458	94,841	129,469	264,345

	Beeves.	Cows.	Calves.	Sheep.	Swine.
Average per Week	6,871	67	797	19,085	21,493
do. do. *last Month*	8,801	93	1,114	23,710	32,367
do. do. *prev's Month*	9,810	104	2,247	30,870	31,783
Total receipts for 1875	453,060	5,034	117,580	1,228,530	1,388,541
Average for 1875	8,713	97	2,261	23,626	26,703
Total receipts for 1874	454,033	3,676	104,719	1,165,353	1,774,228
Average for 1874	8,731	71	2,014	22,411	34,120

Of the receipts for the past year, 167,703 cattle, or an average of 3,569 per week, were received at the new yards at 60th street, which were opened in February last. For the last two months of the year, the average weekly number of sheep received at these yards was 6,077. At the 48th street yards 443,781 sheep were received during the year, an average of 8,534 weekly. At the 40th street yards 701,857 hogs were received in the year, an average of 13,497 weekly. The receipts of beeves at Chicago for 1875 were 920,843 head, against 843,966 head for 1874. The total value of receipts amounted to $48,488,738; the average value being $4.28 per 100 lbs., against $4.58 in 1874. The average price for beeves in this market during the past year, was 11 cts. per lb. dressed weight, the closing price was 10 cts.

A noteworthy feature of the past year's business has been the shipment of live cattle and beef to England. About 400 head of prime beeves have been shipped alive successfully, and sold in the English markets profitably. These cattle were mostly sent by Mr. Gillett, of Elkhart, Ill., a well known breeder and feeder. Seventy head have already been shipped the present year. This new outlet, if kept open, can not fail to affect our home market to some extent for the best class of cattle, which are the only kind sent. The dressed beef shipped, in refrigerators, is said to arrive in good order, and has been received with favor in the London market, selling at 12½ cts. per lb. With the experience before us of the failure of the attempt to ship fresh beef from Texas and Colorado to New York in refrigerator cars, it is hardly wise to build up expectations of affecting this market by shipments to England in steamships. The price at which this beef sold in England can hardly be profitable.

Beeves.—The market has been very unsatisfactory throughout the month. Mild weather, and an overflow of poultry and of dressed meat, large quantities of which have sold for 3 cents per lb., have depressed the market. The failure of several large operators has increased the bad feeling, and prices have marked lower than at any period since 1860. As we close our report, an improvement is perceptible. The weather has become cold and seasonable, the poultry and dressed meat have been worked off, and the market is at least ½c. per lb. better, than a week ago. The closing sales were mostly of 6½ cwt. to 7½ cwt. native steers, which sold freely at 10¼@ 11¼c. per lb., on 56 to 57 lbs. per gross cwt. Prime cattle sold for 13 @ 13½c. per lb., on estimated weight of 58 lbs. per gross cwt. No Texans were on sale, and very few extra beeves.

The prices for the past four weeks were as follows:

WEEK ENDING	Range.	Large Sales.	Aver.
Dec. 20	7 @14½c.	9 @12 c.	10½c.
Dec. 27	8½@11 c.	6½@13½c.	10 c.
Jan. 3	9 @11½c.	7½@13½c.	10¼c.
Jan. 10	8 @13½c.	10 @12 c.	10¾c.

Milch Cows.—The market for fresh cows has been dull, and without demand. Prices are somewhat lower; good fresh cows selling at $65 @ $75 per head; extra at $80, and ordinary at $55 @ $60... **Calves.**—Hog-dressed calves are coming in freely, and the market, steady through the month, closes higher. Fat milk veals are selling at 11c. ℔ lb., dressed weight, for the best, and 10½ for prime; hog-dressed bring 6c. @ 8c. per lb., and grass calves $10 per head, for 200 to 250 lb. calves, up to $12 @ $22 for yearlings....**Sheep.**—The market has been dull and heavy, with larger arrivals than could be sold easily. Poor ewes sold at the close at 4¾c. ℔ lb., alive, fair to good sheep at 6 @ 6½c., and the best at 7c. ℔ lb. Pelts are selling at $1.70 each ...**Swine.**—The market for hogs has steadily advanced, with an active business and light receipts. For dressed pigs 11c. ℔ lb. has been obtained, 160 to 180 lb. dressed hogs, sold for 10 @ 10½c. ℔ lb., and heavy at 9¼ @ 9⅞c. ℔ lb. Western dressed are quoted at 9 @ 9¼c. ℔ lb. The Chicago Live Stock Reporter gives the following particulars of the pork trade for the past year: "Receipts of hogs in Chicago, 1875, 3,912,110, against 4,258,379 in 1874; shipments for the corresponding years, 1,582,643, averaging 233¾ lb., against 2,330,361, averaging 218 lb. The value of live hogs received in Chicago in 1875, is given at $67,226,963. The number packed and taken by butchers in that city for October, November, and December, is 980,077, against 1,041,219 same time last year. Total packing last season, 1,690,348. Packing to date this year, as returned by the Chicago Pork Packers' Association: Chicago, 838,339; Cincinnati, 358,959; St. Louis, 183,833; Indianapolis, 217,018; St. Joseph, 45,000. This is about 325,000 less than were packed at the above places during the same time last year."

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	22.00@ 24.00
Ground Feed, per ton	22.00@ 24.00
Linseed-oil-cake, western, per ton	45.00@ 46.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

Superphosphate of Lime, per ton	$25.00@$26.50
" Ammoniated, per ton	45.00@ 50.00
Pure Ground Bone, per ton	33.00@ 40.00
Bone Meal, per ton	40.00@ 45.00
Raw Bones Unground, per ton	25.00
Bone Black, per ton	27.50@ 30.00
Pure Raw Bone Phosphate, per ton	38.00@ 45.00
Dried Blood, (11@12 per cent ammonia), per ton	40.00@ 45.00
Fish Guano, per ton	20.00@ 25.00
South Carolina Phosphate, (fine ground), per ton	19.00@ 21.00
Niter Cake, (ground), per ton	25.00
Sulphate Soda, ground per ton	25.00
German Potash Salts, (30@35 per cent), per ton	20.00@ 22.00
Peruvian Guano, per ton	58.00@ 61.00
Gypsum, Nova Scotia, ground, per ton	9.50
" In barrels, per bbl	1.25
Sulphate of Ammonia, per lb	4¾c.@ 5 c.
Chloride of Potassium, (muriate of potash), lb	2½c.@ 3 c.
Nitrate of Potash, crude, per lb	8½c.
Nitrate of Soda, per lb	3¾c.@ 4 c.
Sulphate of Potash, per lb	1½c.
Leached Wood-ashes, Can. and N. Y., per bush.	17 c.@19 c.

The trade in fertilizers has been quite brisk the past month, many orders having arrived from England and the southern states. Fish scrap has moved in large quantities, but at a low price; 4,000 tons have been taken at the factories in bulk, at $12 ℔ ton, and in barrels in New York, at $21 per ton. It is expected this foreign trade will increase, as the scrap is favorably received in England. Small lots of nitrate of soda have been sold at 3¾c. @ 3⅞c. ℔ lb., and chloride of potassium at 2⅜c.

DON'T FAIL

To Secure one of the

GOOD THINGS OFFERED

On Page 73, and send to the Publishers for an Illustrated List of Premiums if you have not already received it.

FREE—FREE—For the "Hard Times."—No doubt many a Reader, in looking over the Engravings and Descriptions, (given in our Premium List, and referred to on page 73 of this paper), has felt a strong desire to have several of the good things there named. Well, we say in all candor, it is easy for almost any one to obtain one or more of them, *free of charge.* **First,** is there any doubt that each one of your neighbors would get hints, suggestions, and positive information enough out of a whole volume of this Journal, to abundantly repay him for the small subscription price, ($1.60 for a year, postage included)? **Second.**—Can not you easily tell him, and show him, and convince him of this? **Third.**—You have only to do this in a few or many instances, as the case may be, and in return for this, which will cost you no money, the Publishers will be happy to *present* you with one or more of the premiums, corresponding to the number of names sent. **Fourth.**—Over **16,000** persons have thus done, and are not you equally expert with most of the other 16,000? **Fifth.**—

Every family you get to *reading* and *thinking* more, you directly benefit. The more there are of such persons in a neighborhood, the more intelligent and elevated will the whole society be. Thus, in extending the circulation of this journal, and receiving the premium article, you are literally working "*To do good and make money.*"—Try it now. State that you are working for a Premium, when you send in subscriptions. You will then have a premium credit for all names sent in between now and July 4th, 1876—and can take the premium whenever you desire it.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Fredcrick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

A Fair This Month.—The Southern States' Agricultural and Industrial Exposition, will open at New Orleans, La., on the 26th inst., (Feb.), and continue for 10 days. The premium list is very large, and provides for a wide range of exhibits. The grounds of the Association are said to be of great interest for the variety of tropical and sub-tropical plants growing there, and new and large halls are erecting. Samuel Mullen, 80 Camp St., New Orleans, is Gen'l. Superintendent.

A Dollar on Interest will yield 6 to 10 cents a year. A book in one's house, treating on his business, whether it be farming, gardening, or any mechanical pursuit, will furnish new ideas, awaken new thoughts, develop mental power, and in ninety-nine cases out of every hundred, lead to improved methods of culture or work, that will save or bring back many times the cost of the book. Still more important is it where there are growing sons. Let them see that their calling is of importance enough to have books written upon it, and they will respect it more; they will read, and that will cause them to think; and thinking is what not only raises men above the brutes, but raises one man above another. How many parents see their children reading fiction, exciting and demoralizing story books, etc., and make no effort to make them intelligent in the direction of their daily work. Five, ten, or fifteen dollars put into books of this kind, will pay ten-fold, a hundred-fold the interest that can be realized in any other investment. Think of this. Our advertising pages abound in announcements of books that should be in every farmer's house.

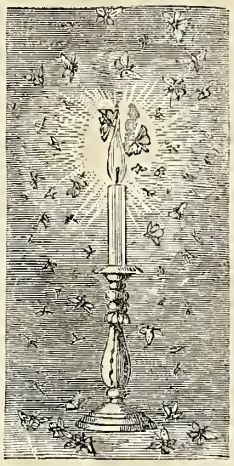
Artificial Fertilizers—Important Action.—On Jan. 13th, at the "*Conn. Agricultural Experiment Station,*" Middletown, Conn., there was a gathering of some sixty of the most intelligent leading farmers of the state, together with twenty dealers and representatives of manufacturers of artificial fertilizers, from Baltimore, New York, Boston, and various other points. The entire day was very profitably occupied in discussion and conversation. We have only space to give the final result. It was agreed that hereafter, the farmers of Connecticut will buy fertilizers only of those dealers and manufacturers who will subject their articles to the analysis and control of the *Station*, and sell upon a guaranteed composition of a uniform character and value. The articles sold will be subject to frequent analyses at the *Station*, so that any deviation from the "*guarantees*" will be quickly detected. This action was fully agreed to by the dealers. This movement will be worth thousands of dollars to that state alone. Spurious and poor fertilizers will have to find a market elsewhere, and as farmers will hereafter be reasonably certain of getting what they intend to buy, they will use these helps to production more freely, and an increased production will be the result. Some other states will very soon feel the necessity of establishing *Experiment Stations*, and of adopting a course similar to that now fully inaugurated in Connecticut.

Exit — The Horticulturist. — "The Horticulturist" was founded by the late A.J. Downing, in 1846, and was carried on by him until his lamented death in 1852. During these years he gave to its pages some of his best efforts, and drew to them a host of excellent contributions. Whoever possesses a series of the earlier volumes, has much that is precious in our horticultural literature. After Downing, the Horticulturist was sometimes in able editorial hands, like those of Barry, but a great portion of the time it has seemed to exist without any editorial supervision. While it had some excellent contributors, it had no competent head, and now that it has disappeared, will not be missed other than by its few remaining early readers, who had an affection for it because it was A. J. Downing's. It is announced that the Horticulturist is united with the Gardeners' Monthly, and that Journal bears the title "Gardeners' Monthly and Horticulturist." We are glad to see that the "Monthly" shows no signs of dilution from the addition of so much weakness; it can gain very little by the change, while the former subscribers to the Horticulturist will find it greatly to their benefit. The horticulturists of the country should support—and liberally, their one journal, and enable the publisher to make its mechanical part better than it ever yet has been. Its editorial management could not be in better hands than those of Thomas Meehan.

The Death of Doct. E. S. Hull.—Those who attended the meeting of the Am. Pomological Society at Chicago, and saw the effective work done by Doct. Hull, on the part of the Illinois Horticultural Society, were greatly shocked to learn, a few weeks after their return home, that the Doctor died at his residence, near Alton, Ill, the last week in November, probably from the results of over-exertion and exposure at Chicago. An earlier and more extended notice of his death was crowded out at the time, and we can now but briefly say that not only western horticulture, but American horticulture, loses one of its most ardent workers and useful advocates. So great was the shock of his sudden death to his wife, that she survived him only four days.

How all the Children are remembered by Mr. Crandall for the CENTENNIAL YEAR, is partially indicated on the third cover page of this paper. Though half a century has passed since we were old enough to enjoy toys, we confess to have been quite a boy again over Mr. Crandall's **"Ye HERO of '76,"** in changing the "Old Soldier" into some of the hundreds of "positions" that he can be made to assume so naturally. One of the most interesting features of this new toy, is to observe how great a change in expression is given by a slight change in the position of a hand, foot, arm, cap, etc. The charming toy will teach children not a little in the study of the human form, and in assuming expressive attitudes and postures, as well as in drawing human figures to characterize various emotions. While a single "Hero" will answer for all this, two or three or more used together, to represent a company of persons in different positions at the same time, will add largely to the effect produced. Taken all in all, this is the finest thing for the amusement of children, that we have ever seen, and a multitude of "grown-up children" will spend many an hour over it.

Sundry Humbugs.



When good, well-meaning persons, who lead quiet and exemplary lives, and who think that they are unknown beyond the immediate circle of their own neighborhood, receive from some far distant city, circulars either asking their co-operation in some swindling scheme, or proposing to cure troubles which they scarcely know by name, they are astonished beyond measure. Their first thought is, "how did these rascals get hold of my name?"—We have before stated that

LISTS OF NAMES & ADDRESSES

were regular articles of merchandize, and it is not uncommon to find them advertised in the city papers. It must be known that nearly all the humbugging schemes are carried on through the mails; these fellows operate at a distance, and very rarely advertise or issue circulars in the immediate vicinity of the place they hail from. In a majority of cases an attempt to find the person who sends out flaming circulars, takes one to the top story of some obscure building, where he finds a locked door with a hole in it through which to drop letters. Operating so generally by correspondence, it will be seen that lists of persons in all parts of the country, to whom circulars may be sent, are a most important part of the outfit of these operators, and in many cases the most expensive one. In former articles we have shown several of the methods by which these lists are procured. One very easy method has been tried so often that it now no longer works so well as formerly. This is to send to the secretaries or other officers of such organizations as Sons of Temperance, Odd Fellows, and similar bodies, a circular stating that the subscriber is about to publish a book of great interest to the order, and if the officer addressed will send a list of the members of his society, he will receive a copy free in return for his trouble. We have before us a letter from a Rhode Island correspondent, who has received a circular from a "Brokerage Co." in St. Louis, asking for a list of all persons in his town worth over $2,000. As our friend did not respond, another circular followed the first. Let all who receive applications of any kind from strangers, for names, refuse to give them. ....So sharp a look-out is kept for names, that we know persons who will not allow their names to go into the directory, as they wish to avoid the annoyance from circulars that is felt by most persons who live in cities.... Many a person who is surprised that his own name is known, would be still more surprised to learn that he has helped in making such lists. Some solicitor or book agent calls upon him, and as he is leaving, the stranger asks the name of the person who lives in the next house on the road, our friend gives his neighbor's name, not thinking that his own name has been obtained in a similar manner a few minutes before, and that the list of the whole neighborhood will be thus filled up....Complaints continue to come of certain

BUSINESS COLLEGES AND TELEGRAPH SCHOOLS.

Charges are made that farmers' boys and girls induced to go there by the promise that situations will be procured for them, are cheated out of their money, and get neither valuable instruction nor situations. We have from time to time been solicited to "show them up." We are often obliged to repeat that we do not show people up on general accusations like these. Let those who have been defrauded by these schools send us a substantiated statement of the facts... Texas, Kansas, and Wyoming have the unenviable notoriety of being among the few states and territories which countenance

LOTTERY GAMBLING,

and some of these schemes claim to be, and we are afraid are, authorized by the Legislature. Let us hope that this Centennial year will see the end of this legalized gambling, and let lotteries stand, where they belong, with faro, roulette, and other games of chance. There is one concern in Texas, the "Mutual Benefit Association," which is simply a swindle. It is located at Kaufman, and its "secretary," Choate Somerby, continues to send out circulars informing persons that one of the tickets sent to them has drawn a valuable prize, and asks that the price of the tickets, $2, be remitted in order that the "valuable gift" may be sent. It is possi-

ble that so stale a bait as this may catch some poor flat-fish....Here is the Wyoming Lottery at Laramie, resorts to a remarkable trick. It has a *special drawing* for agents. Only 5,000 tickets, each one to draw a prize given free to agents. This they do as a form of advertising, so that each agent can say that he drew a prize and thus "create more interest, and cause those agents to sell more tickets in our next Extraordinary Drawing, than $50,000 spent in advertising." In this private and peculiar lottery, $31,546 are offered in prizes from 50c. up to $5,000. This is about the smartest advertising dodge we have known of. Had it been proposed at the east, it would have been "a cute Yankee trick," but in Wyoming it is done, as the head of the circular has it, "By authority of an Act of the Legislature." No doubt the managers have a right to make a lottery all prizes, but this getting up a special drawing for agents, so that their exceptional "luck" will cause them to sell more tickets in other lotteries, which have 8 blanks to one prize looks like—like—Mr. Governor, of Wyoming, who presided at one of these drawings—Mr. Mayor, of Laramie, who was on the stage—Mr. Judge, who, (of all remarkable things), administered an oath to the drawers. What *does* this proceeding look most like?....No, we thank you, Mr. Topeka man,

"NOT ANY IN OURS,"

You come to the wrong shop with your contract. He sends us a contract to fill up by which we are to agree to print his advertisement and give him notices in each issue "of not less than ten or over twenty lines," for so much money, and so much in tickets. We should just like to know if there are any papers in the country who take lottery tickets in pay for advertising....Last month we referred to the great number of nonsensical and worse than worthless books that were offered, and we might have added that the dealers in these also offered a lot of equally

WORTHLESS AND TRASHY ARTICLES.

Boston, New York, and Newark, N. J., appear to be the headquarters of these wares, if they are not all one concern, for their circulars read wonderfully alike. Among the things offered are $2.50 sewing machines; the Brazilian Perfume Stone—that thing you know that comes from "a secluded ravine in the Andes." Stuff to render kerosene non-explosive, and prevent chimneys from breaking; Photographs that show "your future wife or husband;" a preparation for the "Development of the Breast;" that "Butter Compound" again, and various other old, exploded, and worn-out humbugs offered to "Agents." One concern has on its circular of a trashy book, a slip saying: If you send this slip back with 25 cents in a letter, we will send you something that will bring you in, honorably, over two hundred dollars a month, and not occupy more than half your time. Suitable for both sexes." These spurious promises must catch a great many unsuspecting persons; if we may judge from the number of these circulars sent us by persons who ask our opinion of them, there must be many more not so cautious who bite at once at the bait. Our readers may be very sure that if a business circular is of such a doubtful character that they are obliged to ask others about it, it is a very good business to let alone. ....Circulars of attractive mining schemes are industriously circulated, and with a certain class there is nothing so fascinating as the idea of getting rich by

GOLD AND SILVER MINING.

There is just that element of uncertainty about it which makes it attractive to those who believe in "luck," and even at this late day, when mining is in most localities reduced to a question of day's work, there are those who believe that fortune has something in store for them. If those who are old enough to recollect the California fever of about 1849, when an individual really stood some chance to "make his pile," will recall those who went to California and came back, or remained there, really bettered in condition through their mining operations, they will find that the proportion of successful ones even then was very small, compared with those who failed. Colorado is now the attractive mining region, and we cannot better reply to those who ask us about going there than by giving the following from a letter of a correspondent in the mining regions. He writes: "Reading your humbug articles reminds me, as I see thousands of "states' people" rushing to our mines, that some one conversant with mines and mining should give the public a little advice regarding them. There is no greater humbug in existence than our mines, and none in regard to which the operators are more persistent in misleading and deceiving. We have living within twenty miles of us at least one hundred old miners, who have mined in California and various territories, not one of whom, to my knowledge, has visited the famous mines near here. They say there is no doubt that very rich mines exist here, but it's only one of many who will strike a "good thing," and he, for the want of capital and machinery, will be forced to sell to the capitalists when he has partially developed his claim. The capitalist understands this, and practices what is known as the 'freeze out' game, and after one or two years gathers in all the desirable claims at very low figures. Our old miners say they would as soon take their chance in a lottery at once, and thus escape all the work and hardships; and they say that, though a few lucky ones make their pile, thousands work for their board, many not even making that. Taking all the mining here as a whole, there is more invested in labor and capital than the mines ever repay. When a person is lucky, though, it is harped upon for years; stock jobbers and newspaper men never lose an opportunity of mentioning the case as an inducement for others to try. Our papers are perfectly reckless, their only aim being to draw immigration here, well knowing that if a man is once here, they have him for life, for by the time he gets his eyes open he is too poor to get away. Why eastern men of moderate means who can make a living where they are, will come here upon an uncertainty I cannot see, and if the *American Agriculturist* can be the means of keeping a few of the many at home, it will be doing them a good service."

MEDICAL MATTERS

do not open very brilliantly with the new year. It is hardly possible that these ingenious gentlemen—oh yes! and ladies too, for we must not forget dear Mother Noble and Ma'am Legget—will let the opportunity pass and not have a grand Centennial cure-all of some kind. Just now it is very dull, but perhaps it is only the lull that precedes the tempest. Still we have a few interesting cases under consideration, and it is not at all likely that medical quacks will in future numbers escape the exposure they merit....Several inquiries about Wall-street stock-brokers are referred to last month's humbugs.

Prize Potato Crops.—Last spring Messrs. B. K. Bliss & Sons offered premiums for the largest yields from one pound each of Snowflake and Eureka, two of their new varieties of potatoes. The awards have been made, and a full report of the committee will soon be published. The returns are simply astonishing, but they are thoroughly substantiated by evidence and affidavits. Such large yields were of course obtained by every legitimate aid; the eyes of the potatoes, greatly subdivided, and soil already very rich, pushed to its utmost with fertilizers. The report gives many interesting particulars; here we can only give the yields and the awards. Largest yield of *Snowflake* from one pound of seed—1st prize to P. C. Wood, Esther, Ill., 1,417 lbs., $100; 2nd prize to J. L. Perkins, Little Sioux, Iowa, 1,304 lbs., $50; 3rd prize to F. H. Seiler, Verona, Essex Co., N. J., 1,125 lbs., $40; 4th prize to J. I. Salter, St. Cloud, Minn., 1,090½ lbs., $30; 5th prize to Alfred Rose, Penn Yan, N. Y., 1,089½ lbs., $20; 6th prize to Henry V. Rose, Penn Yan, N. Y., 1,069½ lbs., $10. Largest yield of *Eureka* from one pound of seed—1st prize to J. L. Perkins, Little Sioux, Iowa, 1,666¼ lbs., $100; 2nd prize to P. C. Wood, Esther, Ill., 1,403 lbs., $50; 3rd prize to Alfred Rose, Penn Yan, N. Y., 1,149 lbs., $40; 4th prize to Milton M. Rose, Penn Yan, N. Y., 1,145 lbs., $30; 5th prize to J. I. Salter, St. Cloud, Minn., 1,087 lbs., $20; 6th prize to Henry V. Rose, Penn Yan, N. Y., 1,066¼ lbs. $10.

The Illustrated Annual Register of Rural Affairs, by J. J. Thomas; Albany, Luther Tucker & Sons. These little volumes come but once a year, but that is quite too often for us to find some new form in which to express our commendation of them. We can only say that this is as good as the others, and that they are all good, useful, and of real value, and well worth the 30 cents for which they may be had of the Orange Judd Co.

The Methodist, which was advertised in the January number, is now under the editorial management of the new editor, Dr. Wheeler. The Methodist takes high rank among religious journals. It is spicy, intelligent, and liberal.

One Bad Result of Hard Times—"Religious Journals."—Among some good effects produced by the hard times, such as economy, thrift, etc., we have to deplore the course taken by sundry "religious journals" to eke out a subsistence, or existence, and by some, in fair circumstances, to keep up an income. We refer to the recent larger admission of advertisements of quack medicines and quack doctors. Before us is a religious newspaper, considered high-toned, edited by a college professor, and a paper of considerable influence. Yet in this one number are a score of advertisements of an objectionable character; of such a character that they could not get admission into the *American Agriculturist* on any terms. The advertisements are inserted because it pays the advertisers to do so. Yet every dollar they receive from customers is for that which is either of no benefit, or positively injurious, usually the latter. Now the plain question is, are not the editors or publishers of papers advertising such things *participes criminorum*—aiders in the fraud? Their only defense can be that they don't care for the well being of their readers, or that they do not know that such advertisements are injurious. If they take the latter ground, it may be well queried whether they have the requisite qualifications to occupy the position of conservitors and promoters of the public welfare. N. B. The journal above referred to is not the New York Independent, which justifies itself in advertising "patent medicines, etc.," but another journal, one of a considerable class. If the reader will turn to *his* religious paper, and find it free from this species of advertisements, then *that* is not the paper we mean.

Allen's Patent Seed Drills and Wheel Hoes.—These implements have been in the market for several years, and have been used with satisfaction by many experienced gardeners, both for sowing seeds, and for cultivating the crops after they were up. From the experience of last season, we were induced to place this implement upon our premium list, which is as positive a recommendation, as can be given, as nothing but articles of real merit are offered there. In our gardening directions we often say, "not a weed should be seen;" the cultivator part of this implement renders it easy to carry out this injunction, as it may be used among the crops with most "killing effect" on the weeds.

The New Excelsior Lawn Mower is the name given to the latest production of Chadborn, Colwell & Co. It may be that they will produce a mower that will do the work better, with less expenditure of strength, than is required by this, but until they do, we shall have to regard this as, taken altogether, the most satisfactory among the many good lawn mowers.

Our Premium Target Rifle.—Among the numerous valuable Premiums offered for clubs of subscribers to the *American Agriculturist* for **1876,** is one (No. 61) of a *Target Rifle*, designed for hunting as well as target shooting. The other day Mr. JUDD took one of these out to his country residence to *test* it. After firing half a dozen times to get the new bead-sight adjusted in the manner described last month (page 5), he made the 18 successive shots marked on the annexed sketch, which is an exact copy of the 6-inch "*bull's-eye*" of the target, reduced to one-sixth. It will be seen that no ball hit over 2⅝ inches from the central point. This was at a distance of 200 measured yards, (nearly 40 rods!) To give the gun a fair show, the firing was from a rest—on the end of a plank. The firing was stopped by darkness coming on. Mr. J. says he knows no reason why a hundred or more successive bull's-eyes might not have been made equally well, as "*the gun carried just where he held it, every time.*"—When we compare the work of these guns with that of those in use only a few years since, they are certainly worth securing. [The Publishers will be happy to present *just such a rifle* to each person, who will collect a club of 68 subscribers at the regular rates, $1.60 each, postage included. It can be easily done during this leisure month. (For any further particulars see the Illustrated Premium List, which will be supplied free to any one not having it already.) See also page 73.]

"Answer in Your Next Paper," says an Ohio correspondent at the bottom of his letter. He describes his place, and asks advice as to its adaptability to poultry raising and other questions, of interest to no other living mortal, and then says: "Ans. in your next paper in Dec." But he is very careful to avoid giving *his name*. Please notice, EVERYBODY. We can not fill the paper with merely personal matters. We do not reply in the paper to anonymous letters, and we of course can't reply by mail.

Baldwin's American Fodder Cutter.—The makers of this cutter claim that it is "The best in the world." We can not say how just this claim may be, never having tried all the machines "in the world," but of the considerable number we have used, we regard this as by far the best. We have used this for some months, and for ease of working, and rapidity of cutting, it is eminently satisfactory. It is not always a fair test of a machine that hired men like it, but they take to this at once, and look upon the cutting of feed with this rather as play than as work.

Importation of Clydesdale Mares.—Mr. William Crozier, of Northport, L. I., has added to his stock a pair of Clydesdale mares, imported from Scotland by Mr. Simon Beattie, of Toronto, Canada. These mares are four and five years old, dark bay in color, 16

hands high, and weigh about 1,700 pounds each. They have taken four first prizes and one second prize at the Provincial and other fairs in Canada, and are in foal to a Clyde stallion, that was imported by Mr. Beattie at a cost of $4,500. Mr. Crozier has also added to his stock a young Clyde stallion, 2 years old, which now weighs 1,400 lbs., and an imported Ayrshire cow, "Rosie," the first premium cow at the Exhibition of the Highland Agricultural Society, Scotland,

Basket Items continued on page 73.

The American Dairymen's Association.

The eleventh Annual Convention of this Association met at Rome, N. Y., on the 11th of January. Vice-President T. D. Curtis, presided. After some formal business had been transacted, Mr. L. B. Arnold read a paper reviewing the condition of dairy interests during the past year. He deprecated the manufacture of skim milk cheese, (a poor but honest manufacture), and advocated that of oleo-margarine cheese as an improved product. He believed the aggregate returns of the business of dairying would be equal to those of last year, although prices had fallen off. Canadian cheese had met with an enlarged demand, and the reason was that this product was uniformly good, and no skimming was practiced in Canadian dairies. The great requisite for an improvement in American markets was greater attention to quality. Dr. Wetherell, of Boston, endorsing the last remark, urged the Association to declare its opposition to the manufacture of both skim milk and oleo-margarine cheese. Afterwards a resolution to the effect that the convention was opposed to the adulteration of butter and cheese, was introduced and unanimously agreed to. C. L. Sheldon read a paper entitled "Hints on Cheese Making," in which he referred to the difficulty of curing cheese successfully, and to the shrinking of milk from failure of feed at certain seasons. A discussion ensued, in which the threadbare question of the value of fodder corn was the chief subject; the result was a wide difference of opinion, which showed how useless is the discussion of questions in which a variety of conditions is involved, and every speaker views the subject in a different light. Dr. Wetherell read a paper on "Dairy Stock," in which he enforced the necessity of breeding a higher class of dairy cows, which should produce the largest mess of milk from a standard quantity of feed. Various other papers were read upon such matters as "deep and shallow setting of milk," (another seemingly endless provocative of useless discussion, and of conflicting statements), "butter making," "scalding milk for butter and cheese," and "making butter in factories," all of which were followed by prolonged discussions. Prof. E. W. Stewart, of Buffalo, advocated the establishment of a dairy Experimental Station, in a lengthened argument, and suggested as a means of its support, the payment of each dairyman of 3 cents per annum for each cow owned, which he stated would realize $12,000 yearly. The representative of the Onondaga Salt Company, then made his yearly speech in favor of "Onondaga Factory Filled Salt." An agent of the Centennial Exhibition afterwards presented himself, and a committee was appointed to arrange for the proper representation of dairy products at Philadelphia, and to collect funds for this purpose. The report of this committee is to be made hereafter.

Nothing of greater importance followed than the usual denunciations against filthy milk and unclean dairymen, and a surprising speech by a professor from an agricultural college, in which he enforced the "Christian duty of parents to oblige their children to eat cheese," which he declared to be the only single food upon which a young child could grow and thrive; and the impossibility of raising calves upon pure cream. Soon after this the meeting adjourned.

The New York Horticultural Association.

This new Society, the organization of which was noted last month, held its first regular monthly meeting on January 15, at room number 24, in the Cooper Institute, N. Y. There was a full attendance, and an enthusiasm which promises well for the future of the Society. In response to the request that members should exhibit any plants, flowers etc., that were new or of special interest, there was, considering the inclement season, a most gratifying display. William Bennet, Flathush, L. I., exhibited two immense specimens of *Cypripedium insigne*, having upward of fifty blooms on each, and two specimens of another well known orchid, *Dendrobium nobile*, with upwards of seventy-five expanded flowers on each. These plants alone were worth going a long distance to see. Also from Mr. B., were four magnificent specimens of the rarer *Dracænas*, viz., *albicans*, *amabilis ferrea*, *tricolor*, and *Guilfoylei*.

S. B. Parsons & Son, Flushing, L. I., presented a collection of interesting variegated-leaved plants, mostly from Japan, among which were *Camellia Japonica*, *aureo-marginata*, *C. myrtifolia variegata*, *Osmanthus ilicifolius*, *var.*, *Ligustrum ovatum*, *var.*, and others. Archibald Veitch, of New Haven, Conn., sent a new citron-scented Geranium of great promise. Peter Henderson, Jersey City Heights, N. J., a specimen of the new English variegated-leaved Geranium, "Happy Thought," a most absurd name to be applied to a plant that will certainly become a popular one. John Greaves, Paterson, N. J., had fine specimens of *Sedum aizoideum*, *var.*, and a narrow-leaved variety of "Smilax."

Chas. Zeller, Flatbush, L. I. A grand specimen, 4 feet high, and 4 feet in diameter, of an Eupatorium-like plant, the name of which is not yet determined. It is valuable for coming in bloom just at the holiday season, when white flowers are so much wanted. Mr. Zeller also exhibited a fine new seedling monthly Carnation. George Such, of South Amboy, N. J., sent cut flowers of *Luculia gratissima*, *Cypripedium Rœzli*, and *Cereus roseus superbissimus*, one of the most beautiful of the cactus tribe.

William Blount, Jersey City Hights, N. J., showed cut flowers of a new white seedling Carnation, of great promise. There was but little display of fruit. Mr. Foster, nurseryman, of Babylon, L. I., showed well preserved specimens of Duchesse de Bourdeaux Pears, and William Chorlton, of Staten Island, a branch of Guava, in fruit. It is the intention of the Society, when well under way, to give "Certificates of Merit," such as are given by the London Horticultural Society, for all deserving novelties in horticulture. In Europe a certificate of merit from some competent society, is of far greater value to those who introduce new flowers, fruits, and vegetables, than any money premium, as the purchaser buys such plants in confidence, knowing that they have passed a critical examination. At present the purchaser of novelties in this country must depend upon the representations of the seller, which are not always unprejudiced.

Seeds—Seedsmen—and the Law.

A case was recently decided in Monmouth Co., N. J., against a seedsman who sold a farmer a quarter of a pound of turnip seed for 25 cents. The seed was sold as the Early Strap-leaved Turnip, but it proved to be the Ruta Baga, or Sweedish Turnip, a late variety. The farmer claimed that in consequence of its being a late instead of an early sort, he lost $100. That such an amount of damage could result from so small a quantity of turnip seed, was nonsense, and the seedsman should have had no difficulty in proving it to be so. However, the farmer must have discovered, long before he had expended much labor in cultivating the crop, that it was not an early variety, and he had a plenty of time to plow it down, and put in seeds for a crop that would have paid, had he been so disposed. A similar case occurred, and a suit was threatened, in which a seedsman sold by mistake for 1 oz. of Cauliflower seed, what proved to be Savoy Cabbage, though the dealer received it as Cauliflower from one of the most celebrated houses in Europe. The gardener no doubt knew, soon after the seed germinated, that it was not Cauliflower, yet he persisted in cultivating the plants, knowing that they had no more chance of producing Cauliflowers than that thistles would produce figs. He now demands that the seedsman shall pay him the market price per head for Cauliflower, for damage sustained; and should he sue, the New Jersey case will be cited as a precedent. He had in all probability time to sow again after discovering the error, but instead of so doing, he persisted in planting out the Savoy Cabbages, and at the end of the season, modestly presented his bill for what a crop of Cauliflower would have been, had he had a perfect crop. The success of a Cauliflower crop is very uncertain, even where the purity of the variety is undoubted, and this fact no doubt the gardener was sharp enough to know, but he preferred to plant the Savoy Cabbages, thinking he had a safe claim against the seedsman. No wonder the seedsmen are alarmed, for if heavy damages can be claimed in such cases, it will drive every responsible man out of the business. Any designing rascal can buy a pound of Cauliflower seed from Jones, and a pound of Savoy Cabbage seed from Smith, plant the Cabbage seed and present his bill for the market price of a perfect crop of Cauliflower to Jones, and if he objects to pay, the law comes in to the rescue of the rascal, and commands Jones to pay damages. In view of this state of things, all the seedsmen of New York and Boston, together with the leading firms of Philadelphia, have, upon legal advice, decided to print on all their seed bags, tags, bill-heads, etc., a disclaimer of guarantee, reading thus: "While we exercise the greatest care to have all Seeds pure and reliable, it is hereby mutually agreed between ourselves and the purchaser of this package, that we do not warrant the same, and are not in any respect liable or responsible for the Seeds sold by us, or for any loss or damage arising from any failure thereof in any respect." The seedsmen have in contemplation the formation of a Protective Union, composed of all the leading dealers, to make common cause against unfair and malicious prosecution against any one of their number.

Bee Notes for January.

BY L. C. ROOT, MOHAWK, N. Y.

With the most perfect quiet, bees will breed moderately during this month, even in cold climates. To the inexperienced it may seem desirable to induce breeding very early, in order to increase the strength of the stock. Facts have proved that quite the reverse is true. A year ago, about the last of January, I was desirous of ascertaining to what extent my bees were breeding, as I was holding the temperature in my bee-room much higher than was generally recommended. I took from the cellar one of my very best Italian colonies which stood nearest the door, and examined it, finding the usual amount of brood. I gave it no further attention, until I took the bees from the cellar in the spring, at which time this was the poorest swarm in the whole lot of 120; so poor that they swarmed out within an hour after being set out. The queen's wing being clipped, I caught her in front of the hive, and introduced her to a queenless stock, where she proved herself in no degree inferior to those in the strongest stocks, that had been left undisturbed. I mention this instance to enforce more fully the advantage of leaving bees while in winter quarters in perfect quiet. Many have felt it an absolute necessity to improve the first opportunity, during this or the following month, to set the bees on their summer stands, to give them a chance to fly, and then return them to winter quarters.

Some writers have recently advocated allowing bees to fly under glass occasionally during the winter. I have no idea that this will prove a benefit. One of the best things in regard to indoor wintering is the fact that the bees may be prevented from flying during occasional fair days. Recently we have had most positive proof that bees are taken from their winter quarters much too early, and I shall give my ideas on this point more fully in future "Notes." In many enterprises there are always those who talk largely of anticipated results, instead of realities, and many enthusiastic beekeepers have talked of possible profits until beginners have been led to expect extravagant returns not warranted by experience.

Persons interested in bees should understand one very important fact, that bee-culture is a business to be *learned*, as with any other trade or profession, and success depends in a marked degree upon knowledge and experience. I often receive letters asking me to answer "by return mail," giving my experience, with full instructions how to conduct an apiary to return the most profit.

When to Commence Keeping Bees.

Every practical beekeeper will admit that this is a question of importance. I venture to say that the *time* when most persons commence the business, is the prime reason that so many are unsuccessful. It is an established fact, that about every third year we have a poor season for bees. Those who observe the results obtained by others, will say, after a poor season, that they do not care to engage in it, while the next year, this being a good one, the results lead them to think that it may be a business worthy their attention, and this being followed by another good season, decides them. It will be seen that such persons are ready to begin just in time to meet the reverse of a poor season. Every dealer in bees will bear witness that after the best seasons their sales of stocks are invariably the greatest. This is, of course, to the interest of those furnishing bees, as it disposes of them before a poor season, and leaves the greater number on hand at a time when a better crop of honey may be expected.

How to Commence Beekeeping.

This depends much on the information the beginner possesses. To whichever of these classes he belongs, viz: those who merely make it a pastime, or the larger class who wish only honey enough for family use, or to those who desire to make it an exclusive business; the first thing necessary is to secure some standard work on beekeeping where the first principles are to be learned. To purchase bees in box hives at the current prices, and transfer them to the movable comb hive, will require some experience. Probably the best way would be to procure them of some reliable person who will furnish none but the very best swarms, for with all the aid the experienced may lend, the beginner will find enough drawbacks.

A Suggestion.—A "Question Box."

It is a custom at many beekeepers' conventions to establish a question box, where questions of most interest to the members may be collected and answered for the benefit of all. I would suggest the idea to the beekeeping readers of the *American Agriculturist*. Questions of general importance addressed to me will be answered through these columns.

A House Costing $2,500 to $3,200.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans were designed for a suburban cottage, having a cheerful outside appearance, and

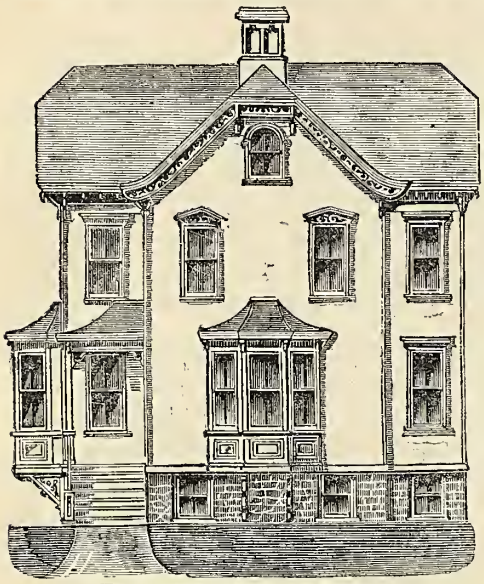


Fig. 1.—ELEVATION OF HOUSE.

containing ample interior apartments conveniently arranged, with such modern improvements as are desirable for the use of an ordinary sized family. ....**Exterior,** (fig. 1).—The general outlines are made up of simple parts, embracing features of pleasing variety and elegance. The foundation walls, showing four feet above ground, insure against moisture from the earth, and add to the superficial dimensions of the structure. Such high foundations for houses of this character afford a proper background for the grasses and shrubbery, usually surrounding them. The irregularities of the principal building; the steep, dark-slated roofs, with their heavy projecting cornices, truncated or hooded gables, and enriched barge boards, together with the stoops and bay windows, are proportioned and arranged to assimilate with each other, and contribute to gracefulness and harmony....**Cellar,** (fig. 2).—Hight 7 feet. Seven good sized windows admit an abundance of light, and afford thorough ventilation....**First Story,** (fig. 3).—Hight of ceiling 10½ feet. The rooms are unusually large, and arranged to be pleasant, comfortable, and convenient. The front entrance has large double doors. This hall contains the principal stairs, which are of "platform" construction. We prefer this form whenever the general plan allows it, as such stairs are much easier, less dangerous, and appear better

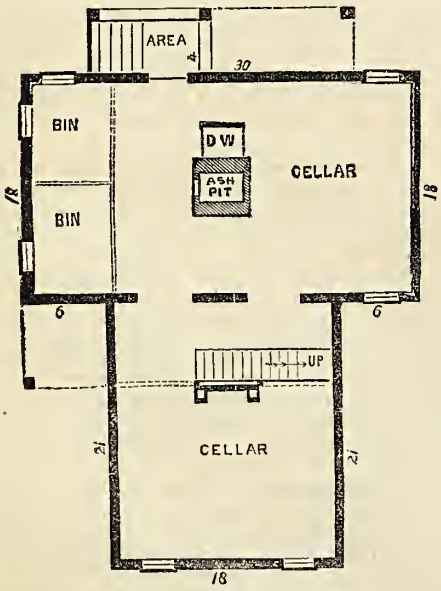


Fig. 2.—PLAN OF THE CELLAR.

than the usual long, straight flights. The hall connects with each principal room, obviating the too frequent necessity of passing through one room to reach another. The Parlor has a fire-place, adapted to either a grate or fire-place heater, (we should prefer the latter in this case, supplied with heating-pipes for warming the chamber above), and is provided with a marble mantle. A large bay window admits sufficient light, and affords a pleasant out-look. The remaining sides of this room are unbroken, leaving ample space for furniture, pictures, etc. The Dining or Living-room is intended as the most agreeable and pleasant room in the house; it has a fire-place with hearth openings, adapted to a "low down" grate, which is a good substitute for the old home-like fire-place, and affords an opportunity for a generous and cheerful fire, and insures the most perfect ventilation. The ashes from these hearth fires fall into the ash-pit below them, thus obviating the necessity and dust of their daily removal. A marble mantle with a large hearth, one bay and three plain windows, and a closet, are provided for this room. The windows afford plentiful light, and views from front, side, and rear, thus assuring a homelike, cheerful apartment. The Kitchen is pleasantly situated has 4 windows for light and ventilation, and is planned with especial regard for convenience. It is in proximity with the principal hall, rear entry, and cellar stairway, has a large pantry, and two closets, and contains a large fire-place, with a range, boiler, sink, and wash-tubs having pipe attachments for hot and cold water. The dimensions of the fire-place are 2 feet 10 inches wide, 5 feet 6½ inches high, and 1 foot 9 inches deep,

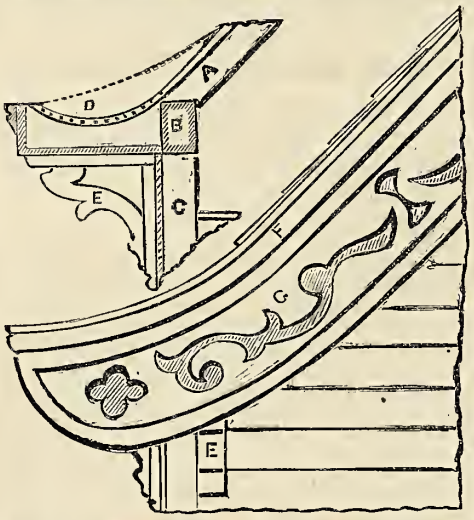


Fig. 5.—CORNICE, GUTTER, AND BARGE-BOARDS.

with a hearth stone 2 feet wide and 4 feet long. The Range is fitted into the fire-place, and has a water-back, elevated oven, and warm-closet, and is connected by pipes with the boiler. The Dumb-waiter, shown on the plan at the right of the fire-place, is intended as a "coal lift," which will save many steps and much hard labor running for coal. This is simply a box, holding 3 bushels (12 scuttles), constructed of 1½-inch floor planks, with wood runners 3 feet long, on two opposite sides, conforming to grooves made in stationary planking in the cellar, and is suspended by weights, with strong ropes, passing over pulleys fastened to the underside of the floor beams. The upper portions of this closet may be fitted with shelving and hooks, as desired. The large kitchen Pantry, thoroughly shelved, is in the "addition" that adjoins the kitchen, and is built in combination with the rear stoop. The Entry, conveniently situated, communicates between the kitchen and dining-room, and with the back stoop through the rear door.... **Second Story.** (fig. 4).—Hight of ceiling 9 feet. This story is divided in the simplest manner; has a hall, three large chambers, with closets for each, and a bath-room, all with sufficient windows for light and ventilation. Each principal chamber has an open fire-place, adapted to grates. Chimneys, centrally situated, radiate most of their heat into the rooms, thus saving fuel. The Bath-room has a French bath-tub, with cold and hot water, and a seat-closet. The Stairway to the attic story is ceiled in over the principal stairs, with a door at the foot. The Attic has three apartments, two in-

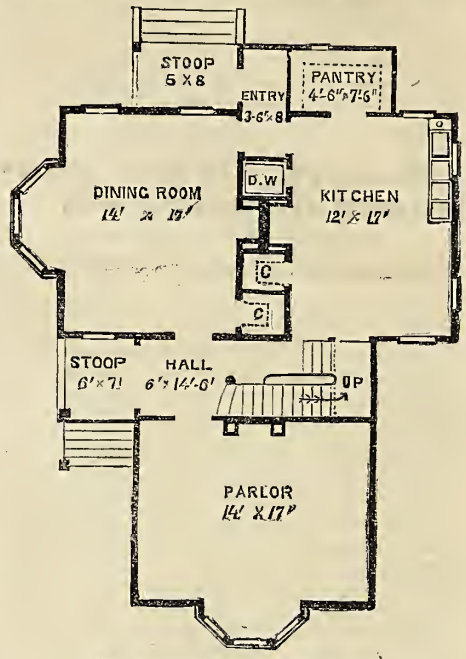


Fig. 3.—PLAN OF FIRST FLOOR.

tended to be plastered and finished as chambers; the third or larger one, is unfinished for an open garret.....**General Construction.**—The Excavations are 2½ feet deep, and the loose earth is graded around the building at completion, leaving 4 feet of the foundation exposed to sight. The Foundation-walls are built as described on page 212, July *American Agriculturist*, 1875. The sub-sills of the windows, and the steps and coping of the area, are of blue stone. The chimneys being near the center are not connected with the foundation walls: The rear one is constructed in box form, below the first floor, as a receptacle for ashes, and has a small iron door near the bottom for removing the ashes. The principal frame work is of sound pine or spruce timber, of the sizes mentioned in the estimate below. When practicable, we would use pine timber for all sills and posts, as the least liable to decay, and spruce for the girts and beams, or account of its quality for stiffness. The siding is of two thicknesses of boarding, as described on page 253, *American Agriculturist*, July, 1875. The principal Roof is constructed at the angles of 45 degrees, securing valuable space for attic rooms, and is covered with dark slate laid on hemlock boards, with tarred paper between. The roofs of the stoops and bay windows, and all gutters and valleys, are of I. C. Charcoal tin, laid on hemlock boards. The method of constructing the cornice, gutters, and barge boards of the principal roof, is shown in detail in fig. 5. *A*, Rafter of

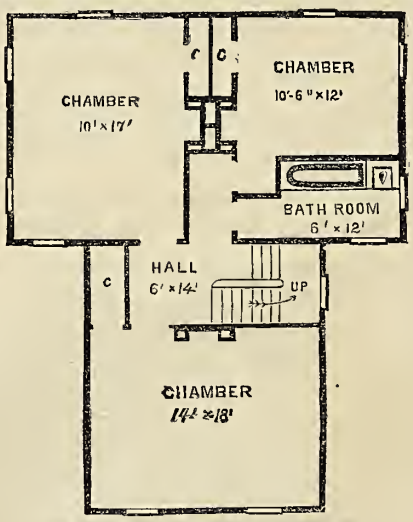


Fig. 4.—PLAN OF SECOND FLOOR.

3 x 4; *B*, Plate of 4 x 6, placed 14 inches above the attic floor; *C*, Post of 4 x 7 timber; *D*, Gutter, having no abrupt angles to bother the tinsmith, or

impair his work, but is of circular form, and stayed with 2-inch furring lath, on which the tin is smoothly and easily laid. *E*, Bracket, constructed of 2x 4, with simple scroll, sawed from 4 x 6 timber. *F*, Crown molding, of 1¼ x 3¼, worked solid; *G*, Barge board with the crown molding attached; this closes the ends of the gutters to the hight of the dotted line at *D*. The stairs, interior trimmings, and the general painting, are intended to be similar to those described on page 334, September, 1875.

In the estimate appended will be found a full schedule of the materials required to construct, and fully develope a house by these plans. The quantities given may be relied on as correct, and their cost is compiled from the prices now ruling in this vicinity. **Estimate:**

69 yards Excavation, @ 25c. per yard	$ 17.25
18,500 Brick, (furnished and laid), @ $15 ⅌ 1000	277.50
53 feet Stone Sills, Steps, and Coping, @ 30 c. per ft.	15.90
841 yards Plastering, complete, @ 35c. per yard	294.35
250 yards Stucco Cornices, at 25c. per yard	62.50
4,903 feet Timber, @ 2c. per foot	98.06
viz. 2 Sills, 4x8 in. x 30 ft. long. Ties, 4x6 in. x 302 ft. long.	
2 Sills, 4x8 in. x 22 ft. long. Plates, 4x6 in. x 151 ft. long.	
3 Sills, 4x8 in. x 18 ft. long. 75 Beams, 3x8 in. x 18 ft. l'g.	
8 Posts, 4x7 in. x 22 ft. long. 54 Rafters, 3x4 in. x 13 ft. l'g.	
500 Wall Strips, 2x4x13, @ 13c. each	65.00
320 Sheathing, 9½ inches, at 25c. each	80.00
170 lbs. Tarred Paper, @ 3c. ⅌ lb.	5.10
820 Siding Boards, 9½ in. @ 28c. each	89.60
Materials in outside dressing and Cornices	80.00
161 Hemlock Boards, principal roof, 10 in., @ 20c. each	32.20
14½ squares of Slate, @ $9.00 per square	130.50
306 Flooring, 9½ in. @ 28c. each	85.68
2 Stoops, complete, @ $50 each	100.00
2 Bay Windows, complete, $150; Stairs, com'e, $100	250.00
21 Plain Windows, complete, @ $12 each	252.00
7 Cellar Windows, complete, @ $6	42.00
22 Doors, with base and trimming, complete, @ $10 ea.	220.00
2 Marble Mantels and 3 Shelves, complete	68.00
1 Range, (with elevated oven and warm closet,) com'e	80.00
Plumbing and Gas-pipes, complete	175.00
Coal-lift and Shelving, complete	25.00
2 Rooms in Attic, finished, complete	60.00
Nails, $20; Bells, and Speaking Tubes, complete, $15	35.00
Painting, $240; Cartage $10	280.00
Carpenter's labor not included above	250.00
Extra for Incidentals	29.36
Total cost, complete	$3,200.00

Should it be desirable to reduce the cost of building by this plan, it may be done without changing the principal outlines or arrangements, by the following deductions and omissions, viz: *Saving.*

Foundations reduced in hight from 7 ft. to 6½ ft.	$20.00
Five cellar windows instead of 7	12.00
Inclosing with single thickness siding	80.00
Roof of shingles instead of slate	60.00
Four plain windows, instead of the two bays	86.00
Deduct 1 window in each; dining-room, kitchen, b'h-r'm	36.00
Reduce the cost of windows and doors, each $1.50	64.50
An ordinary range, instead of one with an elevated oven	40.00
Omit the finish in attic	60.00
Omit plumbing and gas-pipes	175.00
Omit coal-lift, bells, and tubes	30.00
Total reductions	$663.50
Making the cost	$2,536.50

Science Applied to Farming.—XIV.

By Prof. W. O. Atwater, Wesleyan University, *Middletown, Conn.*

Using Poor and Selling Better Hay....Prof. Storer's Testimony....Cotton-Seed as Fodder.—Facts for Farmers in the North and South.

One of the points urged in the last article was, that it might often be excellent economy to feed out the poorer hay to stock on the farm, mixing it with concentrated foods to make it equivalent to the best hay, and thus save the latter to be sold for cash, like any other marketable product. This was brought out, as it will be remembered, by comparing the chemical composition and feeding value of several varieties of fresh and salt-marsh hay, with the better qualities of upland hay, and with young grass. The marsh and bog hays are too poor for ordinary feeding; they lack digestible substance, and especially albuminoids and fats. To enable stock to thrive upon them, we must supply the lacking material. For this purpose, clover, or concentrated foods like oil-cake, bran, grain, or roots, will suffice. The nitrogenous foods will be most economical, because they furnish the largest proportion of albuminoids. To the illustration given of the successful working of this plan in practice, I add the testimony of Prof. Storer, of the Bussey Institution, by whom the investigations of the *marsh hays* referred to were made. In speaking of their value as fodder, Prof. Storer remarks that:

"Marsh Hays

constitute one important resource of the farmers of New England, which will be doubtless availed of in the future as in the past, and the more fully, in proportion as their real significance is more clearly understood. There are few more interesting problems for the farmers of any region to work out, than those which relate to the judicious utilization of the, comparatively speaking, innutritious kinds of food that are produced upon the farm, and are too coarse and bulky to be merchantable. Such problems have lost much of their former difficulty in these days of cheap transportation, when, besides the old resources of root crops, such foods as grain, bran, feed, cotton-seed meal, and other waste products may be bought almost everywhere; and they are, of course, specially easy, when the rough forage itself is in itself fairly good, as the bog and salt hays appear to be when contrasted with the straw that is so large a component of many of the fodder mixtures of Europe."

"It would seem to be plain that there are many places in New England, where it would be not merely good practice, but really excellent farming, to feed out on the farm the hay from coarse natural herbage, with the addition of small quantities of some of the concentrated forms of food, and to send off the farm, in so far as might be practicable, the more costly upland hay, to be marketed like any other merchantable product. It must often be true, all things considered, that for home use the rough, low grade hays are actually better fodder than English hay."

Prof. Storer does not seek to deter farmers from draining their boggy meadows, or embanking their salt-marshes, for, as he says, "there never has been any question, but the agricultural product of New England might be enormously increased, if but a fraction of the wild low land, that is susceptible of improvement, were subdued." But, at the same time, "the natural products of the wet lands are by no means wholly worthless, and whatever value they do really possess, be it large or small, should be clearly recognized, and allowed for, and put to use."—Prof. Storer speaks here of New England, but his remarks apply equally well to other parts of the country, wherever there are poor hays to use and stock to feed.

One of the great sins of the American people, is their wastefulness, and a deal of the blame for this lies at farmers' doors, sparing as they are. What with the land that lies under weeds, manure that is leached away by rain, or carried off in decaying into the air, and fodder that is but partially utilized, it is no wonder that they complain of small gains and hard living. And in this case, judicious feeding of low-land hays, by which the good they contain may be digested and turned to the best account, instead of being wasted, would save more than can be easily estimated.

Cotton-Seed for Fodder.—A Word to Cattle Raisers in the Southern States.

Mr. "A. W. K.," of McKinney, Texas, writes that the farmers in that section know nothing of cotton-seed *cake* or *meal*, but have plenty of the seed in its natural state, and he inquires about its composition and proper use. The leathery hull of the cotton-seed consists chiefly of woody fiber, which is quite indigestible, and is said sometimes to cause irritation of the stomach and intestines of horses and cattle, unless softened by boiling or soaking before it is used. The rest of the seed consists mainly of albuminoid substance and oil, both of which are in the highest degree nutritious. By great pressure a large part of the oil may be forced out, leaving a pomace which is called cotton-seed cake, or when finely ground, cotton-seed meal. When the hulls are removed from this, it is said to be "decorticated."

I am not aware that the feeding value of the seeds in their natural form, has ever been tested by direct and accurate trial. But the digestibility of the cotton-seed cake by sheep, was tested not long since at one of the European Agricultural Experiment Stations. The cake was only partially decorticated. Its composition, as compared with the seed from which it was made, was known, and other experiments indicate that the expressed oil would be almost wholly digestible. So, after finding what proportions of the cake the sheep digested, the experimenters were able to calculate, with tolerable accuracy, how much they would have digested from whole seed. Here are the figures. The seeds are calculated to contain 7.7 per cent water, 7.8 per cent mineral matters, and 84.5 per cent of organic substance, (7.7+7.8+84.5=100). The organic substance alone is taken into account.

Table 23. COTTON SEED.	Organic Substance.	The Organic Substance consists of: Albuminoids.	Crude Fiber.	Other Carbo-hydrates	Fats, (Oils.)
	lbs.	lbs.	lbs.	lbs.	lbs.
100 pounds contain	84.5	22.8	16.0	15.4	30.3
Of this is digestible	56.0	17.1	11.6		27.3

So it seems that 100 pounds of cotton-seed would furnish about 56 pounds of digestible, that is to say, actually nutritious material. And this would be of the very richest sort, for it would contain 17 lbs. of albuminoids, and 27½ lbs. of oil—both most valuable ingredients of the food.

How to Use Cotton-Seed,

is a matter best learned by experience. Mr. K. reports that the farmers in his section "consider it a valuable food for milch cows," and that they "mix it with corn or bran, or both, and feed with prairie-hay, wheat straw, or shucks." He inquires "whether this is the best disposition that can be made of the above enumerated foods?" I should say, quite decidedly, yes, so far as the question can be answered by chemistry. The cotton-seed furnishes just what is lacking in such kinds of forage as low grade hay, straw, corn-stalks, and husks, viz., albuminoids and fats. But I think the good effect of these coarse foods, and of the cotton-seed as well, would be increased by cutting or grinding, and boiling or steaming. Some definite reports of experience in the feeding of cotton-seed, by such men as Mr. K., would be very useful. The subject is an extremely important one. They must be good for fattening, but will they make "prime" butter?

Cotton-Seed and Manure.

It must be borne in mind that cotton-seed is very valuable for the manure it makes, as well as for the nutriment it contains. The ingredients which give the chief value to our ordinary commercial fertilizers are, nitrogen, phosphoric acid, and potash. The manure which domestic animals would ordinarily produce from a ton of cotton-seed, after utilizing all its nutritive matter, would contain more of these than exists in a ton of some of the poudrettes, for which hundreds of farmers in this part of the country are deluded into paying $25 a ton.

Mr. K.'s letter is one of a pleasant kind to receive. His statements and inquiries are squarely put and to the point. Among other things, he refers to some experiments with neat cattle, described in these articles, and inquires whether the results would be the same with horses and mules.—To this question I can give but a partial answer. The experiments, such as have been described, have been performed with horses, oxen, cows, sheep, goats, and swine, but not with mules. More have been made with neat cattle, sheep, and goats, than with horses or swine. As regards

The Digestive Capacities of Different Animals,

contrary to the common impression, different classes of ruminants seem to digest the crude fodder in about the same proportions *when they are properly fed.* That is to say, from a hundred pounds of a given food—as hay, clover, or straw—oxen, cows, sheep, and goats digest nearly the same number of pounds of albuminoids, carbo-hydrates, crude fiber, etc. Horses seem to digest less of these foods than ruminants.—The following table gives the average results of a large number of experiments, by Henneberg, Stohmann, Kuehn, Wolff, Hoffmeister, and others, on the digestibility of meadow hay, ordinary "English grasses," by different animals. Out of every 100 pounds of the following substances contained in the hay, the animals digested the number of pounds set under each, viz:

Table 24. ANIMALS FED ON MEADOW (UPLAND) HAY.	Total Organic substance.	Albuminoids.	Crude Fiber.	Other Carbo-hydrates	Fats.
Oxen	63.3	63.6	63.1	60.7	45.
Milch cows	65.4	51.9	60.	70.4	...
Neat cattle in general	63.5	60.5	62.1	64.4	45.
Sheep	56.6	53.5	59.3	61.2	33.5
Goats	....	56.6	57.6	61.2	43.8
Horses	40.6	46.2	21.4	53.5	75.1

It must be remembered, however, that different

animals may vary greatly in their utilization of a given food, that is, in the amount of production therefrom, even though they may digest the same amounts. For instance, it is a familiar fact that cows or sheep of different breeds, or different individuals of the same breed, will yield widely varying amounts of milk from the same amount of fodder. This may be due, not so much to the difference in the quantity they digest, as to the difference in their utilizing of the digested material.

NOTE TO CORRESPONDENTS.—I must beg the pardon for long delays in answering a number of letters. The fact is, they sometimes come faster than I can attend to them. I hope to be up soon, however, and the letters are always welcome.—W. O. A.

A Talk about Artificial Fertilizers.

Why needed—What they are—Good and bad—Explanations.

The following from a letter by Mr. E. N. Phelps, of Chittenden Co., Vt., puts into words the thoughts of thousands of farmers in all parts of the country. "We farmers in Vermont are often troubled by early and late frosts, which often injure our crops. Many of us have let our land run down until it is hardly worth cultivating. Now we want something that will quicken the growth of our crops, and increase them to the point of profitable production. We cannot produce on our farms all the manure we need, nor can we all afford to buy and haul bulky manure from the towns. We hear a good deal about guanos, superphosphates, bone-dust, and other artificial manures, and believe that if we could be sure of getting the genuine article at fair prices, it would pay many of us to use them. Some have had such poor success with them, that we are afraid to invest. Still we must have something which we can handle and apply easily, and be sure of getting a return. What shall we do?"—Mr. P. gives expression to the general complaint of the poor quality of the commercial fertilizers in the market, and the frequent inquiry as to how to get good ones at reasonable prices. This complaint is only too well founded. Yet there is less fraud in the trade in fertilizers than many farmers think. And the best ones are often wrongly used and bring small returns.

What Constitutes a good Fertilizer?

No ordinary cultivated plant can thrive without a sufficient supply of each of a number of substances needed for its food. With an abundance of all of these, in forms in which the plant can use them, and with other circumstances favorable, the plant will flourish and the yield will be large. But if the available supply of any one of them be too small, a light yield is inevitable.—Every ordinary soil contains all of the ingredients of plant-food. In "worn-out" soils the available supply of one or more of these is generally insufficient.

Fertilizers supply the plant with food which the soil lacks. Barnyard manure not only does this, but also improves the soil as a living place for plants. Lime and plaster (sulphate of lime) are necessary as plant-food, but, as fertilizers, they are chiefly valuable in rendering other plant food available to crops. The ingredients of plant-food generally most lacking in our cultivated soils, are nitrogen, phosphoric acid, and potash. The usefulness of guanos, superphosphates, bone manures, poudrettes, potash-salts, and other similar fertilizers, depends mainly upon these ingredients. Such fertilizers are generally more or less valuable in proportion as they contain larger or smaller percentages of *nitrogen*, *phosphoric acid*, and *potash*, and as these are in a form more or less available to the plant. If all the other conditions for a profitable crop of corn or turnips are fulfilled in a soil, except that phosphoric acid is deficient, then phosphoric acid must be supplied. This may be done with bone, which contains a large percentage of phosphoric acid, combined with lime as "phosphate of lime."

Phosphates and Superphosphates.

But the action of bone, in its natural state, unless ground to extreme fineness, is very slow. The food of the plant must be dissolved before it can be absorbed by the roots, and the phosphate of lime in the bone is comparatively insoluble, and becomes very slowly available to the plant. By treating bones with sulphuric acid, (oil of vitriol), the insoluble "bone phosphate" is converted into a "superphosphate," which is readily soluble, and *can be used by the plant at once.* Superphosphates of lime are usually prepared in this manner. Chemical analysis shows a great difference in the superphosphates of our markets. Some contain as little as 7 or 8 per cent of phosphoric acid, of which 2 or 3 per cent is soluble. Indeed, some have been found to contain *no soluble phosphoric acid*, and are not "*super*-phosphates" at all. Other samples contain 12, 15, or 20 per cent of soluble phosphoric acid. An English superphosphate lately sent to our Experiment Station for analysis, contained 26.4 per cent of soluble phosphoric acid. A fertilizer with 2 per cent, (2 lbs. per 100), of soluble acid, would furnish only 40 lbs. to the ton of 2,000 lbs. A ton of this last would contain some 528 lbs.!

Nitrogen is another important constituent of artificial fertilizers. Some of the higher grades of nitrogenous fertilizers sold contain 10 or 12 per cent, or even more of nitrogen, while the lower grades often contain less than 2 per cent! Among the nitrogenous fertilizers, sulphate of ammonia, which consists of ammonia and sulphuric acid, and nitrate of soda, composed of nitric acid and soda, are very rapid in their action. Peruvian guano, which is rich in nitrogen, is likewise very active; while dried blood, slaughter-house refuse, and fish scrap are somewhat, and raw bones, hair, etc., considerably less active, though they all contain considerable nitrogen.

Potash.—The "German Potash Salts,"

from the mines at Stassfurt, are at present the most important source of potash for agriculture. There are various grades of these, characterized by the amounts of potash and other ingredients they contain. The poorest grades contain as low as 7 or 8 per cent of potash (potassium oxide). Besides the compounds of potash, they contain common salt, and other materials of little agricultural value, including more or less chloride of magnesium, which may be positively injurious to crops. The higher grades have little or no chloride of magnesium, little common salt, and potassium compounds corresponding to 20 to 50 per cent of potash. In some of the German salts the potash is present as sulphate of potash, and in others as chloride of potassium, or what is called by dealers "muriate of potash." The "sulphates" are, on the whole, preferable, but the potash in these is more costly than in the "muriates." The muriates (properly chlorides) sometimes injure the burning quality of the leaf of tobacco, and decrease the amount of starch in potatoes, and of sugar in sugar-beets, while the sulphates are always safe; but for grains, grass, and other fodder-crops, and for wet soils, the muriates are highly recommended. The potash in all these salts is soluble.

All crops need potash as much as they do phosphoric acid or nitrogen, and its usefulness in ashes is well known. It is often deficient in soils, and its use as a fertilizer must increase. For American farmers the high rather than the lower grades of German potash salts must be advisable.

The table below shows the

Composition of Some of the Fertilizers Ordinarily Sold in the Northern and Eastern States. The Analyses are, with one Exception, taken from late Reports by Prof. S. W. Johnson, Chemist of the Connecticut Board of Agriculture.

Essential Ingredients.		1	2	3	4	5	6	7	8
		per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Phosphoric Acid	Soluble....	4.7	9.9	3.4	.....	.....	.....	.....	.....
	Reverted*.	9.3	1.1	3.7	.....	.....	.....	.....	.....
	Insoluble..	3.2	2.3	0.3	.....	.....	.....	.....	.....
	Total.....	17.2	13.3	7.4	21.5	13.0	6.3	11.3	2.2
Nitrogen.....		8.5	3.6	2.3	3.7	2.8	2.1	6.2	1.5
Potash.....		3.1	.....	.....	.....	.....	.....	.....	.....
Retail price, ton		$73	$50	$50	$47	$45	$32	$45	$25

1. Guanape Guano.—2 and 3. "Ammoniated Superphosphates."—4. Pure Ground Bone.—5. "Bone Meal"—6. "Bone Dust."—7. "Animal Dust."—8. "Double Refined Poudrette," contained of sand, fragments of brick, coal, etc., 63.1 per cent, or 1,262 lbs. to the ton. * The terms "reverted," "reduced," "precipitated," are applied to phosphoric acid existing in a state of fine division, and ranking in solubility midway between "soluble" and "insoluble."

Some of the "phosphates" sold in our markets contain small percentages of potash. The value of most of them, however, is based upon their phosphoric acid and nitrogen. How these vary may be seen in the above figures. No. 2, for instance, contains nearly twice as much of these valuable ingredients as No. 3, and yet both have been sold at the same price. Though so few illustrations can not give a full exhibit of the state of our fertilizer market, they nevertheless show the need of definite knowledge of the composition of fertilizers, and that the best are generally the cheapest.

Composition of Ordinary Fertilizers.

These—nitrogen, phosphoric acid, and potash—being the constituents most needed, the majority of our commercial fertilizers contain two, and some of them all three of the above named ingredients, as is illustrated in the table above. The figures are taken from actual analyses of the fertilizers commonly sold in the northern and eastern markets.

What Fertilizers to Use.

Now Mr. Phelps, like his brother farmers, will wish to know what fertilizers to select. To decide, he must first learn what his soil lacks, and then see where he can obtain the needed ingredients in the best form, and at the lowest cost. Whether his land needs nitrogen or phosphoric acid, or potash, or all of these, he can best learn, unless he has the experience of himself or others to guide him, by actual experiments, on a small scale, with high-grade phosphates, nitrogenous fertilizers, or potash salts.

If he desires simply to enrich his land, and is in no special hurry for a return, let him select those which furnish the largest amount of nitrogen or phosphoric acid, or potash, for his money. But if, as he says, he wants a fertilizer to act quickly, and bring his crops forward, so as to keep them out of the way of frost, or prepare them for an early market, let him select superphosphates with a good precentage of soluble phosphoric acid; and nitrogenous manures, with the nitrogen in a readily available form, as nitrate of soda, or sulphate of ammonia, or Peruvian guano; or if these are not easily to be had, dried-blood, fish-scrap, or finely pulverized, steamed bone-dust. There is, practically, but one way that farmers can make sure of

Getting Good Fertilizers at Reasonable Prices.

That consists in knowing the composition of the wares they buy, and in choosing those which contain the needed ingredients in the best form, and at the lowest price per pound. The great difficulty here, is in learning what the fertilizers actually are. To obviate this, let every farmer insist that there shall be established in every state, as there is now in Connecticut, an *Agricultural Experiment Station*, where they can have their fertilizers analyzed, at small cost, or for nothing, and a deal of other work done for them besides.

W. O. ATWATER.

Ogden Farm Papers.—No. 72.

BY GEORGE E. WARING, JR.,

If the Commissioner of Agriculture, when he sets about defending any branch of American stock-breeding from injurious statements, as to the importation of foreign cattle, would give himself the trouble to consult statistics, which must be easily accessible to his office, he would not lessen the usefulness of his department. The facts are as follows, some time ago a cattle-breeder in Maine made the gushing announcement that 3,000 cattle are annually sent from the Island of Jersey to the United States. He reasons therefrom that as the American Jersey Cattle Club records the pedigrees of imported animals, and their descendants, their record is necessarily a humbug, because Jersey cannot furnish so many animals. The Agricultural Society in Jersey takes the matter up, and says that if such

importations are made, (as from Jersey), they are of course fraudulent. The United States Consul in the Jersey district, transmits the resolutions of the Society to the U. S. Department of Agriculture, and the discussion is taken up in this country in a manner that shows a very general wrong impression concerning the facts connected with the importation of Jersey cattle. As secretary of the Cattle Club, and as editor of its Herd Register, I have probably had submitted to me for entry, at least 95 per cent of all animals said to have been imported from the Island of Jersey, and in every case where the facts of importation have been sufficiently established, (save in the case of animals imported very recently without the certificates now required), the entries have been made. These importations extend through the whole period since Taintor and Motley made their first importations, which may be regarded as the foundation of the stock of Jersey cattle in the whole country. The total number of entries of imported and home-bred animals up to the end of 1875, is 6,526; of these only 1,249 are imported animals, being an average for the whole time, (twenty-five years), of fifty per annum. In the years 1868 to 1870, there were two or three rather large importations which would probably carry the average for those years to 100 each, and would reduce the average for other years in proportion. It would have been easy for the Department of Agriculture, by reference to the records in the Treasury Department, to ascertain the exact number imported in any one year, and to have set at rest a question the discussion of which has been the opposite of beneficial to the interests of Jersey breeders. Incidentally to this discussion, the Club has been much reviled for having established rules, which are said to be injurious to many owners of this breed, and there have not been wanting those who ascribe our action to our desire to preserve a monopoly of these animals. No rule of the Club has ever been established for the purpose, nor with the effect of upholding the interests of its members, as opposed to those of breeders who are not members, nor have the restrictions placed upon the recording of imported animals, had any other object than to prevent the registry of animals imported by speculators to take advantage of the growing popularity of the race here, often without regard to quality, and often under circumstances which lead us to suppose that not only had inferior animals been selected in Jersey for sale here, but that good animals from Jersey had been replaced by inferior animals in England, (sent out under the Jersey certificates); and that not seldom English bred animals, with questionable pedigrees, had been offered as coming from the Island. The action of the Club has sometimes, no doubt, worked to the disadvantage of innocent and worthy parties, whose stock, could the facts be known, is absolutely perfect; but at the same time, we have worked for the general benefit, and I am satisfied that our rules have, on the whole, secured a very satisfactory result, as is attested by the increasing popularity of the Jersey cow in every part of the country, where butter making or milk for the family has been the aim.

"Permit me to ask you a few questions about stock-breeding. I have grown up on a Long Island farm of one hundred acres, and expect to have the management of one-half of it after this year. I like farming and intend to stock it and become a good farmer. I like to have good stock, and intend to keep thoroughbred cows and pigs. I prefer the Berkshire pigs, but as to cattle I am undecided. Have long been an admirer of the Devons, but have not much acquaintance with them. From what I have seen, and from the accounts I read, I think I should like them better than any other sort, and wonder that they are not more popular. The cows most profitable here are such as produce good *butter* and good *beef*. There are many Jerseys being introduced here, and they appear profitable for butter. I am half inclined to adopt them instead of the Devons. I shall not attempt to keep both. For my own use should prefer Devons, but don't know whether I could sell them so well. Will you give me your estimate of the relative merits of the two breeds? Would you advise me to attempt to breed thoroughbred stock on so small a farm? I intend to soil, and to feed liberally. How many ought I to be able to keep?"

This letter is a typical one, and represents the sort of questions that all agricultural writers must be frequently asked by new beginners. And it is no small responsibility that one has to assume in answering them. So much of the success of farming, and especially of stock-breeding, depends on the character of the farm, and especially on the character of the farmer, that one always risks the danger of leading an incompetent or improperly situated person into a course which, (while it would be the best under certain circumstances), would not be the best for the applicant. What I say on this subject must be accepted with the proviso that the man and the farm are suited to the purpose.

The Devons are unquestionably a fine race of cattle, many of them are good milkers, their milk is often rich and well suited for profitable butter-making, and when their milking days are over, they fatten easily into good beef, and they have the especial advantage of making the quickest, handsomest, and most tractable working oxen. For all this, they seem to be losing rather than gaining in popularity, and I am not now acquainted with a single conspicuous instance of their being bred as a specialty, while I do know of a number of former Devon breeders who have sold out their stocks and gone into other breeds.

There lurks in this letter a fallacy which is very wide-spread; that is, the idea that in considering the adoption of a breed for dairy purposes, a preponderating regard should be had to the value of a cow as beef, after her milking is done. This, of course, is valuable and important, but its value and importance are much less than secondary. Let us put the probabilities for the yield of butter at from 200 to 225 lbs. per cow, a difference that may very easily be secured by the selection of good representatives of the best breed, or of the second best. Take the average duration of profitable milking as ten years, and we have a difference in butter products of 250 lbs. worth at 30 cts. a pound, $75. In the one case let us assume that we have a worn-out thin cow worth, (to fatten), $20, and that in the other case we have a well-constitutioned larger animal worth, (to fatten), $50; this is the true standard, in considering the worth of the cow for fattening, we have to regard the cost of feed, and care, and time. Here is a difference of $75 in the income from butter, and of only $30 in the value for making beef. I have purposely neglected the citation of large yields and fancy prices, and have presented the case in its proper agricultural bearing for most localities. It seems to me to prove very clearly that no farmer who looks to the manufacture of butter as his business, can afford to consider the beefing value of his used-up cows, as an offset for inferior butter production. Thoroughbred animals get their fancy value from fancy reasons less largely than is supposed. The butter of the Jersey, the milk of the Ayrshire, and the beef of the Short-horn are at the bottom of the fancy prices for all of these breeds, for it is this, after all, that must be looked to for the permanent value of any race. Those who embark largely in the raising of thoroughbreds often pay amazing prices for good specimens, but they have always the fact to fall back upon, that their animals will multiply rapidly, and that a slight advantage in practical value will, with their increasing herds, soon help to make up for their large outlays. They always believe, of course, that they will find customers able to appreciate, and willing to pay, for peculiar excellence, but the whole question, in its wide bearings, finally settles itself down upon the practical agricultural advantage of the race. Short-horns, however fine, that are deficient in the quality of continuing in their progeny the beef producing characteristics; beautiful Ayrshires, well up in all the fancy points, whose descendants will not be good milkers; and Jersey cattle of the fancicst character, whose families are poor butter makers, will always fail in the end to be highly appreciated.

It will therefore be the wisest course for any beginner in stock-breeding, who is willing to invest the necessary capital, and to give the care and attention requisite for success in thorough breeding, to select such animals as are, in the first place, best adapted for the home industry that he intends to pursue, and in the second place, to get such specimens of the breed as will win favor among those who are to be depended upon as buyers at fancy prices, but a prudent man will always regard very high prices as so much lucky addition to his income. He will not depend upon it as an element of his regular business. For example, if one can establish a herd of Jersey cows which will make an average of 250 lbs. of butter per annum, and is so situated that he can secure (net) 50 cents per lb. for his product the year round, so that he may be sure of a gross income of $125, he can afford to pay a very high price for thoroughbreds, or if he has time and patience, he may buy a smaller number of remarkably good females, at still higher prices, and build up his herd, by a few years of careful breeding. If at all well situated, he may depend on a yearly average value of, say $40, for his weaned calves of both sexes. This will pay the interest on the cost of his original stock. Then, in proportion as he is fortunate in his judgment and arrangement, and in his skill in giving to his herd a good reputation, he may increase the value of his progeny to an amount that will add a very handsome profit to a business that has already been fairly profitable and satisfactory. Referring to my own experience, although I have bought many animals for from $150 to $250 each, by far the most profitable ones have been those which have cost me several times these sums. I have already referred in these papers to a cow for which I paid $500, (when this was a much higher price than it would be now), and which has returned me, in her progeny, nearly $2,000 cash, and more than that amount in the value of animals still on hand, these increasing year by year, and giving a value to the herd that reduces the original investment to insignificance. One may buy ten cows of good quality and good pedigree, for $2,500, but the same money *judiciously* invested in one bull and two cows, would probably bring a larger profit in the end. As to the amount of stock that may be kept by the soiling system, on a farm of fifty acres, it is impossible, without knowing the circumstances, to say. The character of the soil has much to do with it, and the character of the management more. As a general rule, perhaps, it would be the wisest course to start with ten cows, even though it might be necessary at first to buy some hay. The stock can be increased by the keeping of the best of the progeny, up to any amount that the farm may be competent to support. The rock on which any beginner is most likely to split, is to be found in the fact that there are always plenty of shrewd breeders, with capital, ready to offer good prices for the best of the increase. No matter how tempting the price, if one has an eye to ultimate success, the best animals must be retained, unless one knows where the same price, or a lesser one, can be used to replace them with better animals.

I should say that, as a business proposition, the question in the present case should be whether to adopt Jerseys for butter, or Ayrshires for milk; for Devons, however good they may be for home use, are practically debarred from receiving the high prices that these other breeds bring. Good though they are, in all respects, they have retired from the fancy market.

WHAT RHUBARB COMES FROM.—*Rheum palmatum* has for very many years passed as the plant which yields this valuable drug, as such it has been long cultivated in gardens which contain officinal plants. Lately another species, and a much more stately plant, named *Rheum officinale*, was brought alive from Thibet to France, and has come into cultivation. It is pretty nearly proved that this produces what was formerly known in commerce as Turkey rhubarb. But now the Russian botanists have proved that the Chinese rhubarb, which comes to Europe through Siberia, is yielded by *Rheum palmatum*. So that this, after all, is one of the genuine rhubarb plants.

How India-Rubber Boots are Made.

A pair of rubber boots is not only a great comfort to those who, like farmers, must be out in all weathers, but where one must continue long at certain kinds of work, almost necessary to the preservation of health. The manner in which crude rubber was affected by temperature, softening by heat, and becoming inflexible by cold, was a great obstacle to its employment for many purposes, for which it is now used, and it is only since the remarkable discoveries of Goodyear, which completely overcame this difficulty, that the manufacture of rubber articles increased to anything like the present extent. What Goodyear's discoveries were, which resulted in the process called "vulcanizing," will appear in our account of the method in which rubber boots are made, which is founded upon a visit to the works of "The L. Candee & Co.," at New Haven, Conn. This is the oldest rubber-shoe factory in the United States, it having been established the same year the *American Agriculturist* was founded—1842. Vulcanized shoes, by Goodyear's process, were first made at this establishment, and its works have grown to be the largest in the country, while the quality of their goods is up to the highest standard.

India-rubber is the dried milky sap of several different tropical trees; these are tapped, the juice collected, and dried in smoke. The crude rubber is received at the factory in masses of various sizes and forms, much of it being in lumps about the size and shape of a soldier's canteen.

The first step in the manufacture is to cleanse the gum. It is first cut into slices by means of a large and very sharp circular knife, revolving with great speed, and kept constantly wet. These slices are then cut into smaller pieces by means of a "chopper," a machine resembling in action a common hay-cutter; afterward the pieces are reduced to minute particles in another machine, through which a stream of water flows, and washes out every particle of foreign matter. The small particles of rubber, thus cleansed, are now shoveled into another machine, which rolls the gum into rough sheets. These sheets are then taken to the drying-room, where they are hung up to remain three months, or until every particle of moisture is expelled. These operations reduce the original weight as crude rubber from 15 to 30 per cent.

After these sheets of gum are dry, they are conveyed to the grinding-room, an apartment illustrated in figure 1. On the right of the engraving is seen a double row of machines, called "Grinders," in which the rubber is passed through heavy metalic rolls, heated by steam. This process softens the gum, and prepares it for the admixture of the sulphur, which is added in proper proportions in another and similar machine, and thoroughly incorporated with the gum; the object of the sulphur, as already hinted, is to render the rubber insensible to the changes of temperature. To accomplish this result, Charles Goodyear, of New Haven, devoted many years of constant experiment. He finally discovered that by adding to the gum a certain proportion of sulphur, and then heating it to a high degree, a chemical change took place, a compound being formed which would remain soft and pliable in all temperatures, and all the year round. The admixture of sulphur was a grand discovery, and its use was of the greatest benefit, but it led to another discovery—that various other substances could be mixed with the rubber. A demand for cheaper goods led to an extensive cheapening process, and what passed for rubber goods, really contained but a small proportion of that material, the bulk being made up of less expensive substances, to materially lessen the cost. Among the things which have been added to increase the bulk and weight, are various compounds of lead; the oxide of lead, (litharge), and the sulphite, (galena), as well as other heavy mineral ingredients; coal-tar and lamp-black are also used to give a jet-black color, and increase the bulk. Farmers and others who associate weight with quality in rubber boots, have no difficulty in finding a heavy article, but it is made so by the use of foreign substances. This adulteration impairs the quality, and boots so made are sure to crack after they are worn a short time. In view of the poor quality of most of the boots made in this manner, the Candee Co. brought out their "Standard Pure" boot. It will be seen that a boot can not be made *absolutely* pure, as sulphur *must* be incorporated with the rubber, to insure pliability in any temperature, and if the sulphur is not hidden by adulterative compounds, as it very frequently is, it will work to the surface and give the boots a grey or sulphurous look. But to continue our description.

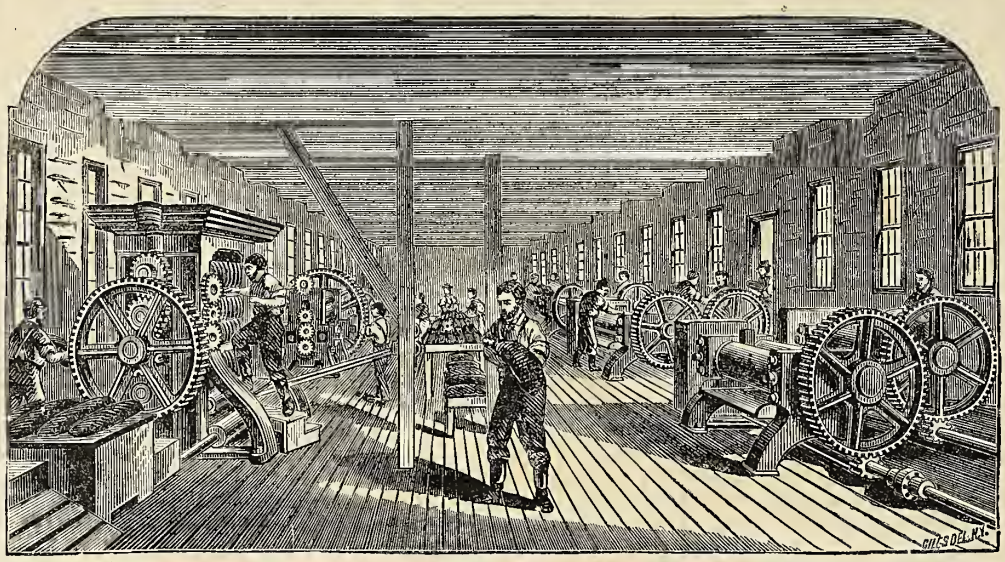


Fig. 1.—THE "GRINDING ROOM" IN THE L. CANDEE & CO. RUBBER WORKS.

After the gum is well softened and properly mixed, it is run through the calender, the large machine to the left of the engraving, (fig. 1), where it passes between heavy steel rolls, steam heated, and being pressed into sheets of any desired thickness, passes to the room above on an endless belt or apron. In the next machine to the left, the rolls are engraved with the diamond-shaped impressions, which give to the soles the roughened surface, with which every one is familiar. Another machine gives the "ornamental" design for shoe uppers. The soles and uppers, being thus rolled out and conveyed up stairs to the cutting-room, are next cut into the desired sizes by sharp, wet knives, in the hands of skillful workmen.—In another department the linings, whether of red cotton-net for shoes, or of a napped cloth for Arctics, or of the "Esquimaux" woven cloth for boots, are coated on one side with rubber, by passing a batch of gum in company with the cloth, between heated rolls, and after being cut into various sizes, many thicknesses at once by dies in a drop press, are distributed to the hands who make up the boots and shoes.

In figure 2 is given a view of the "Candee Co.'s" boot-room. On either side are the boot-makers at work. The Esquimaux lining is first fitted over the tree, rubber-side out. Then the rubber vamp or leg is laid on, and immediately sticks fast to the rubber on the lining. The workman, however, rolls it down with a hand-roller, so as to remove any air that may happen to remain between the rubber and the lining, and to insure perfect adhesion. This is an important point, for if any air be left between the surfaces, it will expand under the heat to which the boots are often subjected, and will create blisters. Finally the soles are put on, and "rolled down" in the same manner. No pegging or sewing is required. After the boots are put together, they are placed upside down on cars, and rolled into the varnish-room. The common kinds of boots here receive a coat of varnish. The "Standard Pure" boots, however, are not varnished. Next the boots are run into the "heater," to be vulcanized, by heating to nearly 300°, and the boots, after remaining a while, are then run out, and, being removed from the "trees," are conveyed to the packing-room for examination. The "pure" boots come out of a grayish color, which afterwards turns to a whitish yellow—but the cheap boots are of a shiny black, and much more attractive in appearance. After the heels are nailed on, to make doubly sure, the inspector examines every boot. Those that happen to be blistered, or otherwise imperfect, are punched in the top of the leg in front, and are packed and sold as "seconds." After packing, the cases are ready to be shipped.

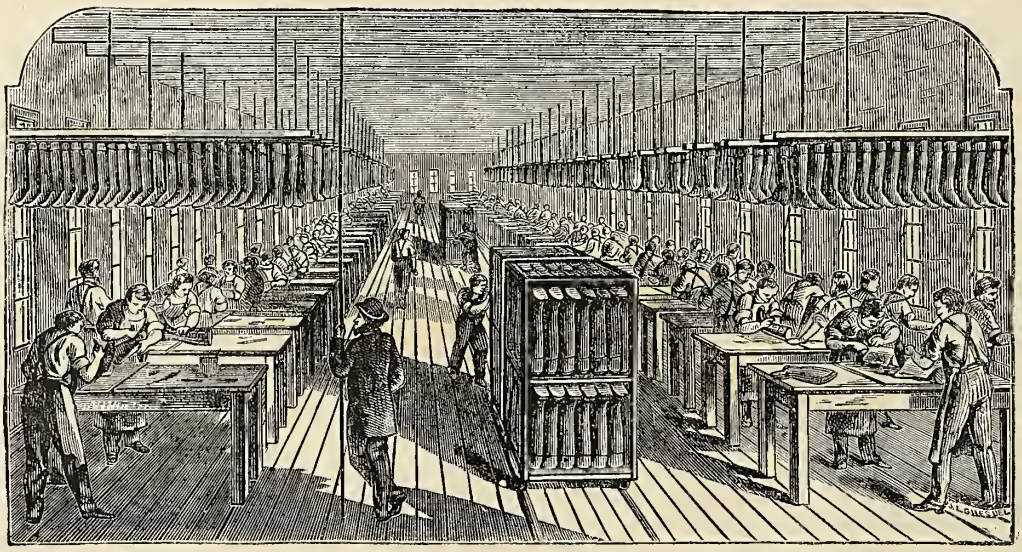
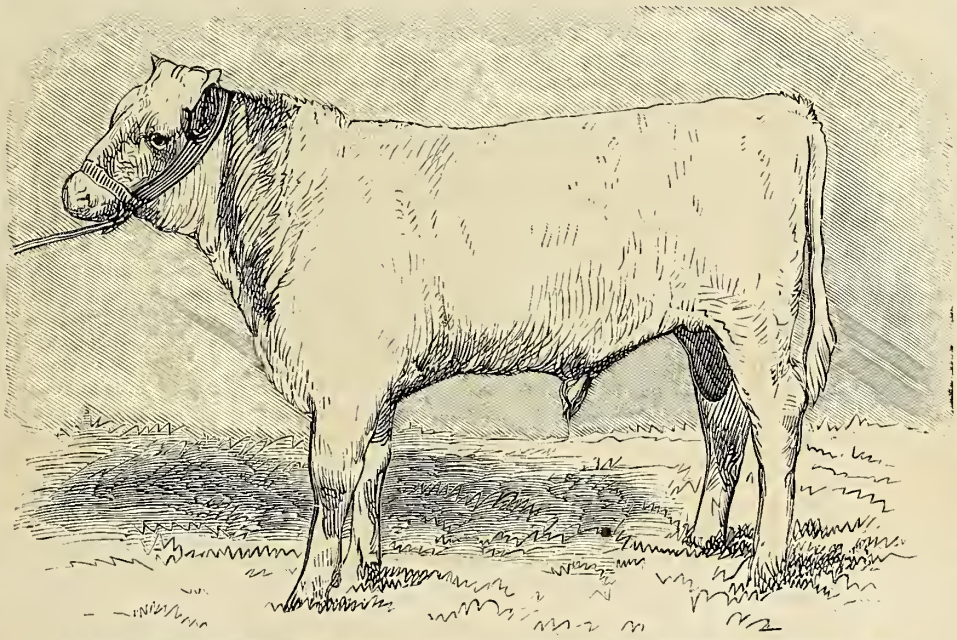


Fig. 2.—THE BOOT ROOM IN THE L. CANDEE & CO. RUBBER WORKS.

The Small White Pigs.

The result of the English shows the past year, has been rather indicative of a decrease in the popularity of the black breeds of swine, and of greater favor shown to white breeds. Color is wholly a matter of taste in that country, where the heat of the sun is never so intense as to make the keeping of black pigs more desirable than that of white ones; and as no one can distinguish a ham or a side of bacon from a black pig, from that from a white pig, (unless it be that a stray black hair has been accidentally left on it,) there is nothing in mere color to make one more desirable than another. Neither is there any reason to suppose that the black breeds have lost their character as rapid and economical pork producers, or that white breeds have gained a point in this respect. Popular prejudice is a thing difficult to account for, and it is especially so in regard to the color of animals of low or high degree. Nevertheless, it has been consulted by those who look for profit in breeding stock, and the fashion having turned in England, the breeders are there giving more attention to the white breeds, and these have the past year appeared in greater force at the exhibitions. Another curious instance of the uncertainty of popular taste, is the varying popularity of the large and small breeds. This oscillates back and forth, just as the fashion in regard to color. We have never yet seen any satisfactory evidence that it pays better to feed small pigs than large hogs, if both kinds are equally pure bred. Locality, cost of feed, and the demands of the markets, have a great influence in deciding the choice in this respect, and we suspect that a well bred hog or pig, well fed and well cared for, will make about the same amount of pork for a bushel of corn, or the same amount of money for the same quantity of feed, whatever breed it may belong to. With us the impression that a black pig is less apt to suffer from the heat of the sun, than a white one, is a great thing in its favor, and will always tend to make the black breeds popular, especially in the southern states. Nevertheless, some people fancy the white breeds, and the Suffolks, Chester Whites, and the Yorkshires are popular with many farmers. The beauty, quick growth, fine bone, and light offal of the small breeds, are very much in their favor everywhere, and the handsome appearance of a well bred, small, white pig, is very attractive. We give on this page a portrait of a pig of this kind, a well bred white Suffolk. This breed occupies the same place with the white varieties, that the Essex does amongst the black ones. No pig makes better pork, when young, than the Suffolk, and pigs of this breed have dressed 120 pounds at five months old, without being forced. The economy of feeding a pig which has so little waste, the meat of which is placed where it is most valuable, and which has so little bone or head as this, is very great. The food is used to the greatest profit. It is unfortunate that those who raise pigs do not seem to thoroughly understand how much greater profit there is in keeping animals of an improved kind, and in using only pure bred boars, of whatever breed they may fancy, than in raising those from mongrel males which cost more in feed than the pork comes to.



YEARLING SHORT-HORN BULL "LORD LAMECH."—*Owned by Mr. Pickrell, Mechanicsburg, Ill.*

A PURE BRED SUFFOLK BOAR.

The Booth Short-Horns.

The competition between the rival classes of Short-horns, known as Booth and Bates, is becoming closer. For some time past the Bates stock has been in the ascendent. The Duke and Duchess family, which was Mr. Bates' most successful creation, has for some years past overshadowed all other families and classes of this breed of horned stock. They have become the fashion, and scarcely any price that could be paid for them, has been held to be an extravagant one by those devoted to this fashion. The prices paid for Duke bulls and Duchess cows have been so exorbitant, as to lead easily impressed people to suppose that every excellence that could be brought beneath the hide of an animal, was concentrated in these. But of late the excitement is wearing itself out. Other families of the Bates stock are coming into favor, not exactly eclipsing the Dukes and Duchesses, but causing their brilliance to pale through the newer radiance of the rising lights. The Booth stock is also rising, and those breeders, who have stuck to this class through its evil report, are now reaping the reward of their constancy. In the English show-yards, which are looked upon here as well as there as the best test of both popularity and merit, the Booth animals have swept the field. For three years in succession, animals got by bulls of John B. Booth's breeding, have carried off the first prizes in the cows' class. Mr. Outhwaite's cow "Vivandiere," which is a splendid animal, if we can judge by her photograph, has received premiums valued in all at $5,357, during her show career. And finally the sale ring, the best test of all, has shown that this class of stock is now equally popular with the best of the Bates stock. In September last there occurred a sale of the stock of the late Mr. W. Torr, which was largely bred from the Booth tribes of Short-horns. The result of the sale was an average price for 85 animals of $2,525 each, or $214,650 for the lot. The highest price ever paid in England for a cow, was paid for "Bright Empress," an animal four years old. A three-year old bull was purchased by Mr. Harrison, of California, for $1,300, and a fine yearling bull, "Lord Lamech," was bought by Mr. Pickrell, of Illinois, for $2,940. In the London "Agricultural Gazette" we find an excellent portrait of this animal, taken from a photograph. It is interesting to compare this portrait with that of the "Duke of Underley," the calf of the "10th Duchess of Geneva," which was given in the *American Agriculturist* for September, 1875. This animal is valued at over $15,000, and it certainly is not easily distinguishable to an ordinary eye, however well versed in judging stock it may be, where the great difference in value lies. The Booth animal seems in no way inferior to the Bates, either in form or substance—if indeed it does not promise to even excel it. The outline indicates a future weight and massiveness, and an elegance of form, which leaves little, if anything, to be desired, and of the two animals at the same price, many persons would prefer the former. "Lord Lamech" is of the "Lady" family. His sire, "Knight of the Shire" (E. H. B., 26,552) by "Killerley Monk" (20,053), by "Dr. McHale" (15,887), by "Baron Warlaby" (7,813). On the female side he is from "Sylph," by "Sir Walter." Mr. Torr has long been known as a most skillful and successful breeder, and his herd has gained an enviable reputation. Mr. Pickrell also brought to Illinois with him from this sale a five-year old cow, "Germania," for $2,300, and a yearling heifer, "Waterloo Shield," for about $2,500. Although Mr. Pickrell's herd was already one of the best in the country, this reinforcement to it will make it still more valuable.

Among the Farmers.—No. 1.

BY ONE OF THEM.

Farmers, I believe, always like to read about other farmers and their ways, at least I do; and next to the fun of commenting yourself upon the way your neighbor does his work, is the fun of having somebody else comment on it. I spent a few weeks last fall among some pleasant farmer folks a good distance from here, and their mode of life—their *walks* and *ways*, actually as well as figuratively are so different from ours, as well as, upon the whole, so good and thorough, that I am inclined to make them better known.

Customs that come down from a remote antiquity, whilst almost everything has changed, ought to have some good in them. Variations in long-established habits are not made without some real or fancied advantage. I will not say but that our ways are a great deal better than those of European farmers, but that when we criticise their systems fairly, we must take into account their surroundings—their customs, markets, roads, expenses, etc., as well as soil and climate.

It was mostly among the farmers of the Channel Islands that my time was spent; and since my return I have been surprised to learn from conversation with neighbors and friends—many of whom would be shocked to have it suggested that they were even "rusty" as regards their geography—how few people know what and where the Channel Islands are. So it is worth while briefly to say, that on the northwestern coast of France, between the cities of Brest on the west and Cherbourg on the north, there is a deep jog like a little bay of Biscay, so to speak. In this bay there is a group of small islands which own allegiance to the Queen of Great Britain, and are sheltered under the wing of the British government. The two larger ones are each about as big as Staten Island. These are Jersey, the largest of the group, and Guernsey. Alderney is very much smaller, and Sark smaller yet. They are in plain sight of the French coast, and of one another. The people speak French as their mother tongue, but all that one is brought in contact with speak English well also. The islands are famous for their healthful, mild climate, as a resort for invalids and for quiet pleasure-seekers, being neither warm nor cold the year round; for their excellent granite, for their early potatoes and fruits, and for the breeds of butter-producing cows which have originated upon them. Those of Alderney first became famous in England, and gave their name to the Channel cattle. This was unfortunate, especially as the breeds of Guernsey and Jersey are quite distinct in their characteristics, as is now well known.

Channel Island Farming.

Imagine what a change it would make in our farming if we could be set down in a country where the buildings are all of stone; farm-yard fences 8 or 10-foot walls laid in cement; the roads, so hard, and of such easy grades, that fully double the loads can be drawn upon them that it would be safe to draw in this country; the principal fences of the farm, living ones, growing upon ridges or earth-walls, and needing only a little dressing and repairing occasionally, to turn cattle for a hundred years to come. This condition of things really exists there, and though, at first thought, one might say it has little to do with farming, yet it is not so.

We complain of high taxes—at least, we suffer from them. Yet, do not we tax ourselves more than we are taxed, twice over, by building unsubstantially, by submitting to have poor roads, and by making fences which can last, at most, only a few years? I saw buildings known to have stood since the 11th century—built, to be within bounds, four hundred years before America was discovered. If a house is built to stand, and well built, it will last a good while, and children's children for generations may play under its eaves. People did not even know how long a *thatched* roof would last.—Clearly, the thatching of one generation was a good roof for the next. Tile-roofs were regarded as much better, however, and the old straw roofs are gradually being replaced by tile and slate. Thus the landscape is likely to lose a very picturesque feature, but the change will be so gradual that another generation or two will still be familiar with the mossy thatched roofs, which look like such warm brooding shelters to happy households, or to snugly stabled kine.

Stone Sties and Byres.

Where stone abounds, and is easily gotten out and wrought in useful shapes, I found it always extensively employed for building purposes, in ways too which seem strange to us. Stone for houses, and barns, and stables, strikes us as quite the thing—very good, but expensive—but when it comes to stone pig-sties, I think most farmers would shake their heads and say, that this was carrying thoroughness and durability too far for profit. Yet look at it. I saw a great many sties, in which there was not a particle of wood, except for a single outside door. Usually, small feeding-rooms exposed to the weather were upon one side, and yards into which litter was thrown to be worked over were upon the other, with the sheltered sleeping quarters between. In the walls, which formed the front of the feeding-rooms, stone troughs were placed just above the stone floor of the pen. These were, of course, accessible to the pigs from the inside, and conveniently so to the farm hands from without, both for pouring in the feed and for cleaning and washing them out. In some cases the entire length of the trough was accessible from outside the pen; in others, a stone shute was made through which to pour the feed. Pigs so penned have nothing to gnaw, and they cannot get to the ground to root, for the whole floor is flagged. Those parts of the pen which it is desirable to keep clean—namely, the feeding and sleeping-rooms—may be swept and washed out as easily as any floored apartments. In such a structure, durability, security against damage from fire, from decay, from vermin, and from disease to its inmates, are secured. In the matter of freedom from *rats* alone there is almost incalculable advantage—for consider the fact, that trichina and measles (tape-worm), parasites with which pigs are frequently afflicted, are disseminated by rats greatly more than by any other cause.

The cow-stables, or byres, are usually made with most of the inside work of stone also—giving great durability and freedom from allurements to vermin. We might easily introduce the stone or cement feeding-troughs—as for the stone floors they are another matter—very good, under many circumstances, but not better than oak ones for our purposes—especially with barn cellars. The feeding-troughs vary in shape and in construction. I noticed those that were each cut out of one piece, others consisting of slabs of stone set in cement, and others still made altogether of cement. Where stone can be conveniently got in slabs ten to eighteen inches wide and two or three inches thick, feeding mangers for cows may easily be made by bedding the edges of these in a mass of cement laid upon a grouting of broken stones; the slabs being kept from falling apart by long bolts or clamps of iron, and the partitions being of pieces cut in the proper form.

Cleanliness.

In these byres, and about the farm buildings generally, among well-to-do farmers, cleanliness for its own sake, is the rule, though there are, as with us, exceptions. They husband manure more carefully than we do, and the loss of the liquid parts is rarely seen. One reason for this is doubtless the close proximity of the barns to the dwellings. In many cases the farmer's dwelling forms one side of a quadrangle, the cow byres and dairy rooms a second side, the barn the third, and a high wall with arched gateway, the fourth side against the road. While on the subject of cleanliness, let me allude to the cleanly way of milking that prevails in the Channel Islands.

The Way of Milking.

Though I believe the Jersey milking-can has often been described, yet, before going there, I had never known how it is used. The can is of tin, globular, with a flat bottom and a rim around it. The upper part of the globe is open, and has a flaring top, which is about 8 inches in diameter at the edge. A handle, like a pitcher handle, is upon one side, attached to this flaring top. When in use, a rather closely woven linen napkin is tied over the top, and under the handle, so that it will sag down into the can to a depth of three inches or so. In this sag of the strainer a seashell is laid—one of the shells of a scallop being usually employed. The streams of milk strike into the shell, and the foam soon rises and nearly fills the strainer; specks of falling dirt mostly rest upon the top of the foam. Those which are carried down, wash over the edge of the shell, and lie beneath it. There is no spattering, and the milk is obtained entirely free from hairs and specks of dirt, while soluble dirt, which sometimes falls in, comes as little as possible in contact with the milk.

Roads.

I was curious to learn by what system the public roads were kept in such excellent repair, and found that it was by a very simple rule—one which, with a little trouble, any community, except one upon the prairies, or similar stoneless region, may adopt. That rule is to keep all soft ground and vegetable growth off the road-bed, and to fill all depressions or spots where water will stand at all, with finely broken stone—the hardest that can be obtained. The stone-breaking is done by hand, with light, long-handled hammers, and either contracted for, or in some places used as good employment for criminals, or for charity labor. This last is a kind of labor which we do not employ as we might in this country. Poor folks, with us, are left alone, or fed by their neighbors, until they are fairly "upon the town"; then they are sent to the poor-house, and their children bound out. If some such work as stone-breaking were provided, at which barely enough to provide food could be earned, people out of work in the winter, or at any time, would be glad to do it. Where this work is done by charity labor, I noticed it was altogether job-work. Boxes, without tops or bottoms, are provided of uniform size, being about 4 feet long, 18 inches high, and 2 feet wide. When full of broken stone, the inspector can lift one end or the other a little, and get out a shovelful almost anywhere, and when he "passes" it, the box is lifted off, the stones falling off on all sides on a regular slope. The prism-shaped heap is then thoroughly sprinkled with whitewash, so that no lazy fellow can steal any of the stones to fill his own box, and also to prevent adjoining proprietors from purloining them to dress their private ways with.

In Jersey they have been recently—I don't know how recently, but within the memory of man—making some fine, broad roads, in which the principles of McAdam and of Telford have been followed to a greater or less extent, as occasion demanded. These roads are therefore known to have, at least in soft ground, a foundation of large stones, properly laid upon a drained bed; these topped with coarsely broken ones, and these with small ones; but how the most ancient roads were made, it is hard to tell at this day. There are no zero nights there, and no upheavals consequent upon frosts coming out of the ground from a depth of three or four feet. Where such freezing occurs, especially on clayey land, there is no absolutely good road possible, unless the land is drained thoroughly, and a stone roadway built upon that, as above described.

In bowling along upon the perfect roads of Europe, I have often thought over the changes such a state of things would produce here. How many wagon-makers and wheelwrights would it throw out of employment? How much money would be saved to the farmers' pockets? What would be the effect on all concerned, if one horse could do the work on the road that we need two for now? Would it not almost pay in two or three years for having the roads put in such order?—Such an operation takes time, and the thing to do, is for communities to work into it by degrees, making the cost so small at any one time as not to be observed.

High Rents Paid for Land.

When high rents are paid for farm land, and but little larger crops are raised, and but little higher

prices are obtained for produce, than we can get here, the reasons why farmers can afford to work in this way, must be sought in something besides their modes of culture, and the cheapness of human labor. Good farming land, well located, and naturally rich, rents in some parts of Jersey for £8 to £10—say $40 to $50 gold—per acre. Of course, much farming land rents at decidedly lower rates, but what would American farmers think of paying such a rent for land, and laying it down to grass at that, sometimes? I saw enough of European farming to make up my mind that it will be time enough for us to laugh at their clumsy implements, and at their slow and "old fogy" ways of doing things, when we can point to better results.

Building Fences of Prairie Sod.

However much we may desire to avoid the use of fences, and by herd-laws and other means strive to avoid their cost and maintenance, we must as yet regard them as a necessity. Fences no doubt cost money, time, and labor, but so do houses, barns, and stables, and yet we consider these as indispensable to the management of a farm, and are always discussing the best methods of building and arranging them. All our discussion leads at last to the conclusion that at least the boundary of every farm must be protected by fences of some kind. Inner fences may well be abolished, except for pastures, but there must be some barrier around each farm, at least to mark the boundary, if not to prevent trespass. It is not reasonable to expect others to look after the safety of our property. The first duty of a man is to care for his own, and, as far as regards his fields and his stock, he can do this more easily by means of fences, than in any other manner. There is much to be said as to the kinds of fences that are likely to be the most economical, permanent, and useful. On account of the abundance of timber in many localities, we have been lavish, not only of fences, but of fence material, and the costly rail fence, now that timber is becoming scarce, can no longer be easily maintained. In some newly settled parts of the country, where there is no timber, wooden fences are simply out of the question, and an immediate substitute must be found. A temporary expedient to avoid the building of fences has been found in the enacting of herd-laws, which compel every owner of stock to look after his animals, and restrain them. But the time will come, when this can no longer be done, and there will always remain the difficulty arising from a lack of fences on the highways, and the resulting but unavoidable trespass and damage. This must be provided for, and an easy means of enclosing the farm is very desirable. We have long considered that a fence of the tough prairie-sod, built in a cheap manner, might be made to answer a temporary purpose at least, until a living fence or hedge could be grown, and boundary plantations made for shelter and protection. The difficulty in this lies chiefly in the cutting of the sod into proper lengths, that may be quickly and smoothly built into a wall. We find an excellent suggestion to meet this difficulty in a book recently published, and already noticed in the *American Agriculturist*, entitled "Nebraska, its Resources, Advantages, and Drawbacks," by Mr. E. A. Curley. In reference to fences in a prairie country, Mr. Curley considers the sod fence as the best temporary resource, until hedges may be planted and reared. He suggests a method of cutting the sod, by means of a machine, easily made from materials always at hand on prairie farms, which we illustrate. Figure 1 is a frame, similar to a sled, mounted upon side-runners, and fitted with a tongue. To this frame an inner one is fixed upon pivots, so that it may be lifted, when necessary, out of contact with the ground. When at rest, this inner frame rests upon the cross-bars of the principal frame or sled. The inner frame has an axle, upon which four wheel-coulters of ordinary breaking-plows are mounted. These are placed three feet apart, and are so arranged that

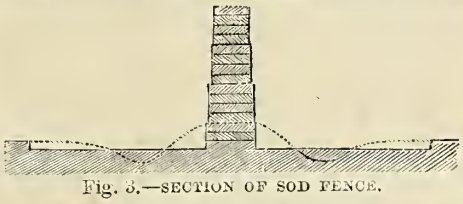


Fig. 3.—SECTION OF SOD FENCE.

they cut the sod three or four inches deep. The pressure sufficient to force the coulters through the sod is gained by the weight of the driver, who stands upon the step, shown in the illustration, at the rear of the machine. A guard is made in front of the step, to protect the driver, in case of an accident or sudden stoppage, and prevent him from falling upon the coulters. This machine is driven across the line of the fence-row, at a distance of about 12 feet upon each side of the center of the fence, thus cutting the sod in strips 3 feet wide and 24 feet long. To make the turning easy, handles are provided, by which the cutter-frame may be lifted from the ground. When the row has thus been all cut into strips, the breaking-plow is run up on one side of the center of the intended fence, and a sod 15 inches wide thrown over flat, exactly upon the center. The plow is then run down so as to throw a second sod upon the first, as shown in the center of figure 2. Then the plow is run up and down, so as to cut the sod into strips from 15 to 12 inches wide, gradually decreasing the width as the outer edge of the strip is reached. This is shown in figure 2. These strips of sod are 3 feet long, having been cut into this length by the previous operation. These are readily thrown by hay forks, or dung forks, on to the fence line, where they may be rapidly piled up into a wall, as seen at figure 3. This should be done evenly and well, laying the sods so as to break joints. As these fences are apt to be heaved with the frost, or distorted by frequent freezing and thawing, upon the south side of those that run east and west, it will be well to run a few furrows, throwing a bank of earth against the fence, and leaving a shallow ditch upon each side. This, as indicated by the dotted lines in figure 3, leaves a strip of mellow soil in which plants for a hedge may be set, upon the outside of the fence, and a row of trees for shelter may be planted upon the inside. By the time the hedge is fully grown, the bank may be allowed to fall into decay, or being of no further use, it may be leveled. A more substantial fence is shown in figure 4. This is made in a similar manner, except that the sods are built up in two walls, the space between being filled with earth from the ditches seen upon each side. In building this fence, sods are placed crosswise here and there, to keep the outer walls from

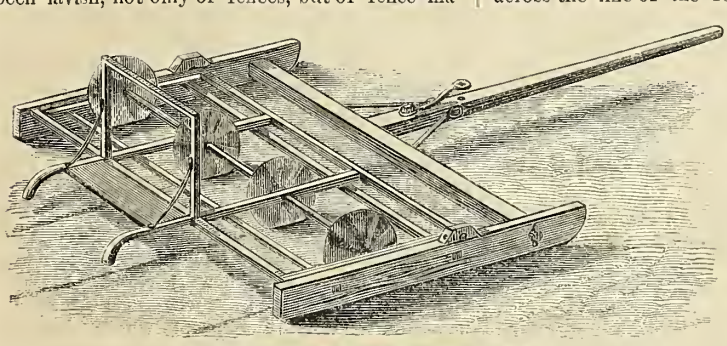


Fig. 1.—MACHINE FOR CUTTING SODS.

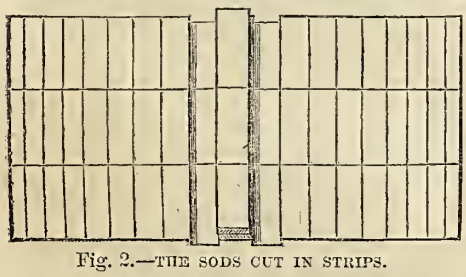


Fig. 2.—THE SODS CUT IN STRIPS.

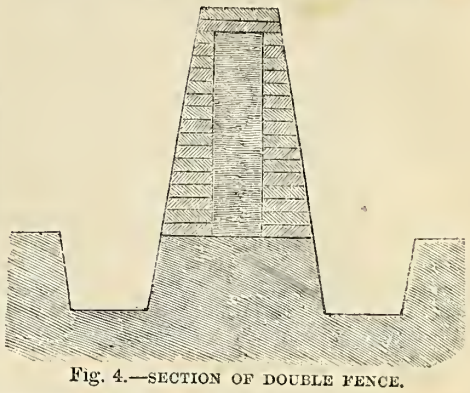


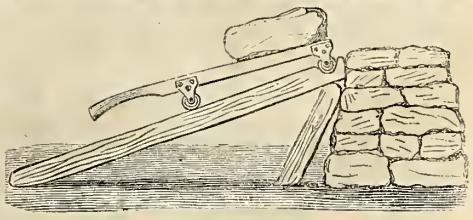
Fig. 4.—SECTION OF DOUBLE FENCE.

spreading, and the top is capped with sods. This fence is calculated for a farm in a low or moist situation, where drainage is needed, or for a stock-farm. The ditch is a perfect protection for the fence against horned animals, which would otherwise damage it by tearing it with their horns; a favorite pastime with the untamed Texan steer, as well as with some more civilized cattle.

The growth of hedges so far, has been very unsatisfactory. The osage orange, which is the best and most available plant, nor in fact any other, will thrive under neglect. Five years is ample time in which to grow an impassable hedge, if it is well managed. It is reasonable to suppose that there would be a sufficient demand for the services of a capable hedge-grower in every county, who would grow hedges by contract for a fixed sum, and care for them annually. Hedges must have at least yearly attention, and some require it twice yearly, or they will soon fail. Professional hedgers ought to be in demand, and until they are, there will be no proper hedges, or at least very few of them. A farmer had better pay a competent man to look after his hedge, than to let it go to ruin for want of the care that he will rarely give it himself, even should he know how to do this. The miserable failures one sees on every hand, go to prove that farmers do not know how, or will not take the trouble, to care properly for their hedges after they are planted. As the hedge question must inevitably soon become a serious one for farmers everywhere, but especially in the west, it would be a wise thing for young men to make the rearing and care of hedges a study and a business, and it might be a good thing that this study be made a special branch in Agricultural Colleges. Meanwhile this sod fence will not only be a good protection for the farm until a hedge can be grown, but it will furnish needed shelter, both for it and for a plantation of young trees, and will also furnish a strip of mellow ground upon which they may be planted. As this strip must be broken and plowed before a hedge can be planted, this necessary labor will go to reduce the actual cost of the fence, which is less than 30 cents a rod.

Building Stone Walls.

An easy method of lifting large stones, when building walls or fences, is here illustrated. This is now a seasonable work, and much may be done



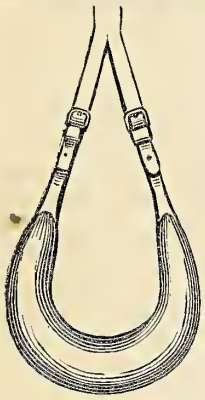
TRUCK FOR HANDLING STONE.

at this time of the year when farm work is not pressing. If any walls are to be laid, the work should not be delayed, as the spring is now rapidly approaching, when labor of more immediate importance must be undertaken. With this method

of handling, one man can raise very large stones. A strong plank, or a frame made of two planks, fastened together side by side, is laid against the wall, resting at the upper end upon loose posts properly placed, or some other sufficient support. A deep groove is cut in the upper end of the plank or frame. A low frame or carriage of planks, mounted upon rollers or small iron wheels, is provided, and a pair of strong handles are fixed to the front, as seen in the engraving. The stone is rolled up on to the carriage, which is pushed up the plank or frame until the forward roller or wheels drop into the groove. It there remains, while by means of the handles the carriage is tipped and the stone turned on to the place where it is wanted. By previously preparing its bed, the stone may in many cases be dropped, so as to need but very little change of position.

A Crupper-Pad for Horses.

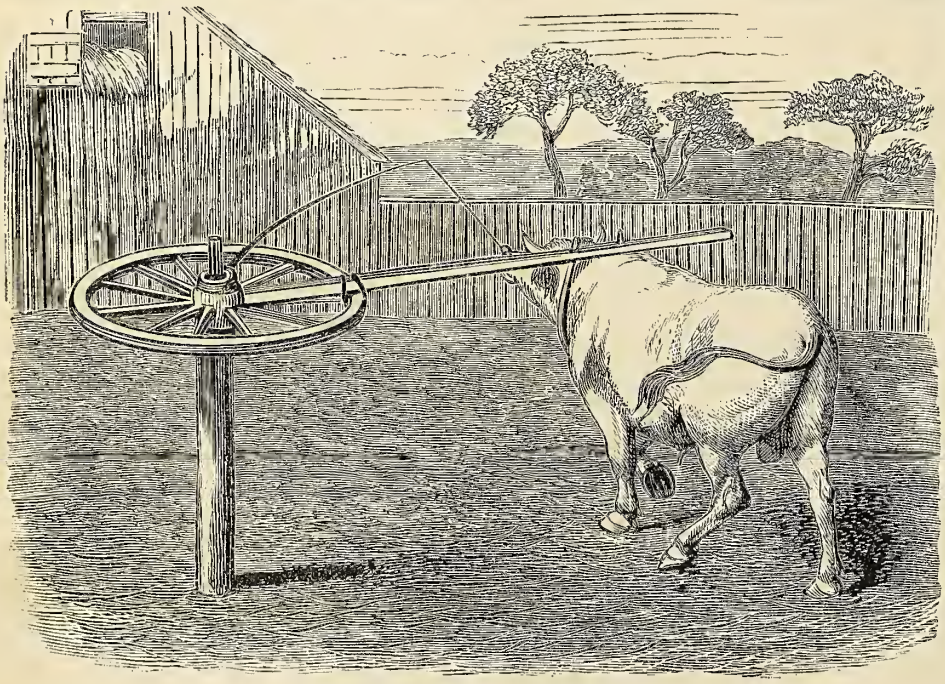
A correspondent asks for a method by which he can prevent a horse from carrying its tail upon one side, and also prevent it from clasping the reins beneath the tail. He suggests "nicking" the tail. We can not advise the operation of "nicking," which consists in cutting the skin and muscles upon one side of the tail, and tieing it over to the cut side, until the cuts heal, when the skin, being drawn together, pulls the tail permanently over to that side. A different form of the operation causes the tail to be carried up in a style that is supposed to be more graceful, and prevents the horse from clasping the reins when driven. As a preventive of both of these habits, the pad shown in the accompanying illustration is often used by horsemen, instead of the cruel and unnecessary operation of "nicking." This appliance is made of leather, is stuffed with hair or wool, and is about three inches in diameter at the thickest part, gradually tapering toward each end, where it is fastened to the crupper-straps. It should be drawn up close to the roots of the tail, and by exerting a pressure beneath it, the tail is carried in a raised position, and is not thrown over to one side. If it is, a few sharp tacks may be driven into the inside of the pad.



CRUPPER-PAD.

The Management of Young Bulls.

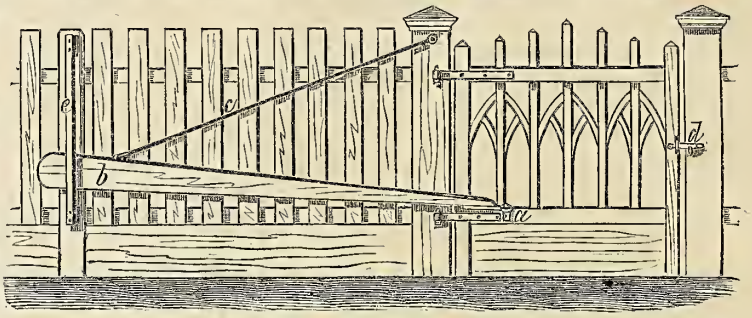
"A Young Breeder" wants a method of disciplining his bulls so that they may be made more docile and manageable. To do this it would be advisable to work them occasionally in a one-horse tread-power. They should be used to this when young, and thus being made amenable to restraint, there will be no "breaking" needed afterwards, and consequently no trouble. We have used a Jersey bull in a tread-power in which he worked with more steadiness than a horse, and twice a week he served a very useful purpose in cutting the fodder for the stock. Nothing more was needed than to lead him by a rope from the nose-ring into the tread-power, and tie him short so that he could not get too far forward. He was very quiet, not at all mischievous, and was a very sure stock bull; and besides this, the value of his work was at least equal to the cost of his keep. Where there is no tread-power, a substitute may be found in the arrangement here illustrated. Set a post in the barn-yard, bore a hole in the top, and drive a two-inch iron pin into the hole. Take the wheel of a wagon that has an iron axle, and set it upon the top of the post so that it will turn on the pin as on an axle. Fasten a strong pole (such as a binding pole for a hay wagon) by one end to the wheel, and bore two holes in the other end, large enough to take the arms of an ox-bow in them. Fix a light-elastic rod to the wheel, so that the end will be in advance of the end of the larger pole. Yoke the bull to the pole, and tie the nose-ring to the end of the elastic rod, in such a way that a slight pull is exerted upon the ring. Then lead the bull around a few times until he gets used to it; he will then travel in the ring alone until he is tired, when he will stop. Two hours of this exercise a day, will keep a bull in good temper, good condition, and excellent health.



MANNER OF EXERCISING A BULL.

A Self-Acting Device for Shutting Gates.

The following description, accompanied by a very neat drawing of a self-acting gate-closer, has been sent to us by F. Friedrich, a subscriber in Wisconsin. The device is not patented, but is freely given to the public by our correspondent. We consider this more valuable than many of the patented appliances for gates, and expect it will be widely used. Lest any difficulty should hereafter occur through any patent-right claims that may be presented for any gate made upon this plan, it would be safe to keep a copy of the present number of the *American Agriculturist* with this illustration for future reference. The gate may be of any kind that is hung upon hinges. The device may be applied to single or double gates, and to light or heavy ones, by simply changing the weight of the shutting-bar. The shutting-bar (*b*) is 5 to 8 feet long, one inch thick, and should be made in the form shown in the engraving, so that the weight will be mostly at the farther end from the gate. The bar is fastened to the gate by a half-hinge (*a*), which should project from the gate two to four inches; the heavier the gate, the farther the hinge should project from it, so as to make the weight of the bar more effective when the gate is nearly closed. To the lower end there is screwed an iron bolt, in which is a slot two inches long, which gives room for play upon the half-hinge. The bar is fastened to the gate-post by a chain or rope (*c*), which may be lengthened or shortened at pleasure. A guiding bar (*e*) is fixed to the fence so as to have play-room of two to three inches, in which the shutting-bar may work up and down freely. The mode of operation is as follows: When the gate is opened, the hinge, which is several inches from the heel-post of the gate, pushes the shutting-bar backwards. As it is held by the cord or chain, it cannot go backwards, but is forced to rise in the space between the guide bar and the fence. The hight to which it rises is regulated by the length of the cord or chain. When the gate is released, the weight of the shutting-bar operates at once, and as it is held by the cord, it must push upon the gate so as to close it. A self-operating latch (*d*) should be used, so as to fasten the gate when it is closed. This device can be used for doors as well as gates, and will be most useful for those people who are afflicted by visitors who have that very common but very annoying habit of leaving gates and doors open as they pass through them.



SELF-SHUTTING GATE.

Fish Scrap as Food for Sheep.

Some of the Maine farmers have been in the habit of feeding "porgy chum," or the scrap left from the manufacture of fish-oil to their sheep, and extravagant statements have been made as to its value for that purpose. As a test, Prof. Farrington, of the Maine State Agricultural College, divided a flock of ten lambs, and fed half of them with hay and what scrap they would eat, and the other half with hay and a quantity of corn equal in weight to the scrap eaten. The five corn-fed lambs gained 48 lbs. in weight in four months, and the five fed upon scrap gained 47½ lbs. in the same time. The quantity of scrap eaten was only one pound per week for each sheep. It is concluded, therefore, that the fish scrap is equal to corn for feed. The analysis of the dried fish, freed from moisture, as determined by Prof. Geo. H. Cook, of New Jersey, is as follows: in 100 parts there are of organic matter 78.30, (this is said by Prof. S. W. Johnson, to contain 7 to 8 per cent of nitrogen, lime 8.67, phosphoric acid 7.78, silicic acid 1.33, potash 1.54, soda 1.02, magnesia 0.67, and chlorine 0.69). This analysis shows it to be of considerable value as food for some of our farm animals which may be in-

clined to eat it. The experiment, however, is not fair as regards corn, on account of the small quantity consumed. Had an equal number of animals been fed all the corn they could have profitably consumed, there is little doubt but that would have been found the more valuable food. It is shown that fish scrap will be eaten by sheep in small quantities, and that to that extent it may be utilized as feed, but if only one pound per week is consumed, it is evidently not a desirable food.

To Fix or to Lift a Gate-Post.

A plan of setting a post for a gate or fence firmly in the ground is illustrated at figure 1. When the post-hole is dug, a flat stone is laid in the bottom, against the side upon which the strain upon the post causes it to press. The stone receives the pressure, and having a larger surface than the post, is not so apt to work into the earth at times when it may be wet and soft. When the post has been placed, and the post-hole nearly filled with earth, another stone is laid against it upon the side towards which it is drawn by the weight of the gate or fence. The use of the stones distributes the pressure over a greater space, and there is much less tendency for the post to work loose.

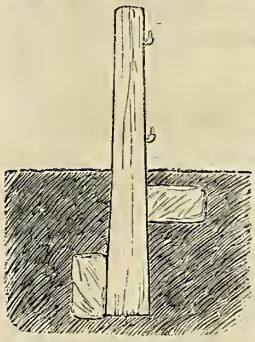


Fig. 1.—FIXING A POST.

When a post is to be moved, it may be readily drawn out of the earth by fastening a chain or rope around the bottom of it, and carrying it over a stake or a piece of plank, if nothing better is to be procured, as shown in figure 2, and then hitching the team to it. A large portion of the force of the team is changed in its direction to an upward one, and this is generally sufficient to lift the post. Small stumps, or partly decayed large ones, may be lifted out of the ground in the same manner.

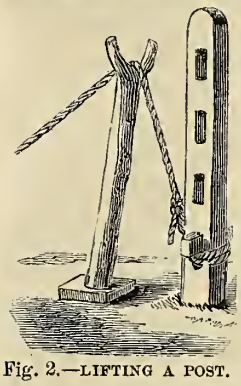


Fig. 2.—LIFTING A POST.

Hints for the Workshop.

A grindstone is very seldom kept in good working order; generally it is "out of true," as it is called, or worn out of a perfectly circular shape. A new stone is frequently hung so that it does not run "true," and the longer it is used, the worse it becomes. When this is the case, it may be brought into a circular shape by turning it down with a worn-out mill-file. It is very difficult to do this perfectly by hand, but it is easily done by the use of the contrivance shown in figure 1. A post, slotted at the upper part, is bolted to the frame. A piece of hard wood, long enough to reach over the frame, is pivoted in the slot. This should be made two inches wider than the stone, and be pivoted, so that an opening can be made in the middle of it, of the same width as the stone. This opening is made with sloping ends, so that a broad mill-file may be wedged into it in the same manner as a plane-iron is set in a plane. At the opposite end of the frame a second post is bolted to it. A long slot, or a series of holes is made in the lower part of this post, so that it may be raised or lowered at pleasure by sliding it up or down upon the bolt. If a slot is made, a washer is used with the bolt; this will make it easy to set the post at any desired hight. It should be placed so that the upper piece of wood may rest upon it, exactly in the same position in which the file will be brought into contact with the stone. A weight is laid upon the upper piece to keep it down, and hold the cutter upon the stone. When the stone is turned around slowly, the uneven parts are cut away, while those which do not project beyond the proper line of the circumference, are not touched.

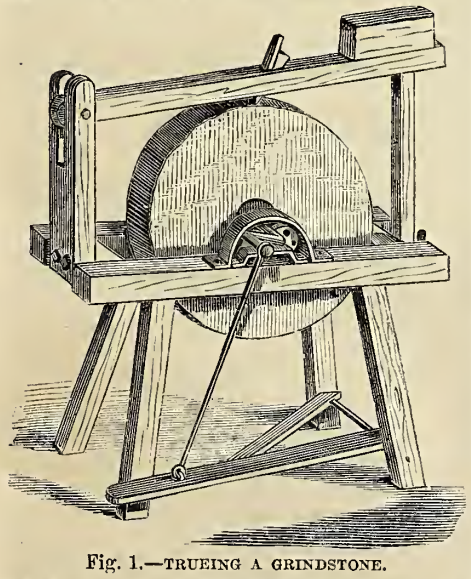


Fig. 1.—TRUEING A GRINDSTONE.

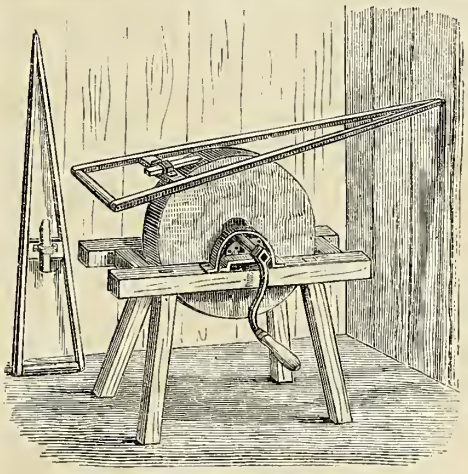


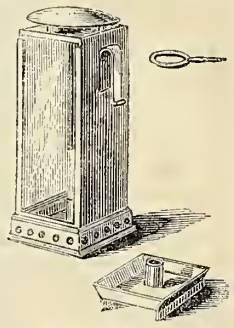
Fig. 2.—HOLDER FOR TOOLS.

MILL PICKS and COLD CHISELS may be held by this contrivance while being ground. In grist-mills, where a number of picks need grinding very frequently, an extra hand is often required to hold them, and much time is unnecessarily lost. By wedging them in the upper piece in the manner described, and raising the post to the proper hight, any boy, however inexperienced he may be, will be able to grind them properly. In the same way cold chisels may be ground. Mill picks and cold chisels should be ground to an exact angle suited for the work required of them, which may be readily done by placing them in the proper position by suitable wedges, and the position will not be changed during the grinding — a very important matter.

A GRINDING FRAME to hold tools, is described by a correspondent, and engraved in figure 2. It is made of light pieces of pine, or hard wood, in the shape shown. The tool to be ground is fastened to the cross piece. A sharp point, a nail, or a screw, is fastened to the narrow end of the frame, and when in use, the point is stuck into the wall of the shed, which forms a rest.

A Safe Barn Lantern.

Several readers, referring to our recent caution against using kerosene oil in the barns and stables, have asked for a description of a safe lantern to use in their out-buildings. An engraving is here given of the lantern we have been in the habit of using in the barn and stables, which is perfectly safe and more convenient than an oil lantern. The frame is made of tin; the back is wholly of tin, and the front and sides are of glass or sheets of mica, which slide in grooves in the corner posts of the frame. The bottom is pierced with holes to admit air, and the top is covered with a cap, which prevents the wind from blowing down into the lantern, but which permits the heated air and smoke to escape. A handle in the shape of a hook is fixed to the back, by which it may be hung up in a proper place upon a staple or a screw-eye fastened in the wall or to a post. A common tallow candle is perhaps the best light, and a dish made to go easily into the lantern, and leave a small space around each edge for the circulation of air, as shown in the illustration, will be found very convenient and cleanly in use. No spark can possibly drop from the wick and fall out of this lantern. A small oil lamp may be used in place of the candle, if found more convenient or desirable, but we have found so much difficulty in getting good burning oil that will not gum up and stop flowing, that the tallow candle made in the common mold was adopted as the best light in every respect. In making the candles, the wick should be divided into three equal parts, and loosely plaited into a flat, soft ribbon. In burning, this plaited wick will turn over to one side and the burned end will waste away at the side of the flame, and require no snuffing, while the common form of wick must be frequently trimmed, or it will burn very dimly. The glass or mica slides can be slipped out of the frame in an instant when necessary, either to clean the lantern or to trim it, and the tin back should be kept clean and bright, to act as a reflector.



BARN LANTERN.

An Ohio Barn.

Mr. Henry Kyle, of Green Co., Ohio, sends the following description of his new barn, which he thinks has many conveniences. The total cost was $1,200, in addition to the owner's work, and the value of the frame timber, which was cut upon the farm. From the sketches sent by Mr. Kyle, the accompanying engravings have been prepared,

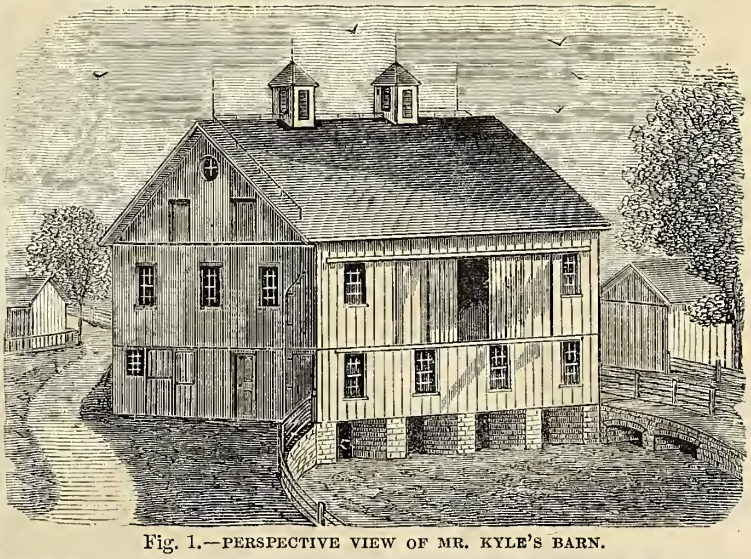


Fig. 1.—PERSPECTIVE VIEW OF MR. KYLE'S BARN.

which will help to make the description clearly understood. The basement is 60 feet long and 24 feet wide, and 7 feet high in the clear; the walls containing 70 perches of stone-work. The floor

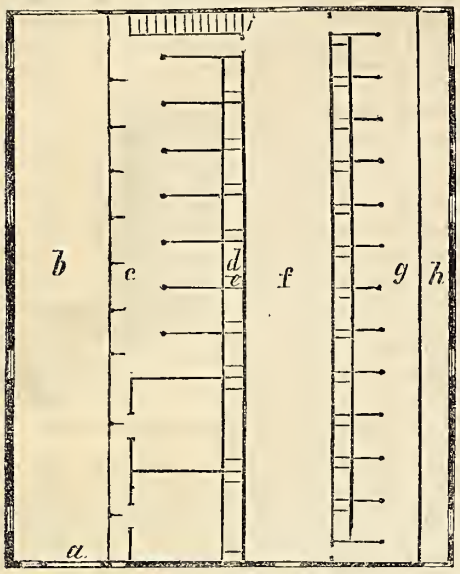


Fig. 2.—PLAN OF STABLE FLOOR.

above is supported by two rows of pillars, the outside row, seen in the engraving, are 2 feet by 6, the inside ones are 2 feet square. The barn is 48 feet wide. The floor of the cow-stable (fig. 2), which is over the basement, rests upon joists which are laid upon cross-sills, which reach from the ends of

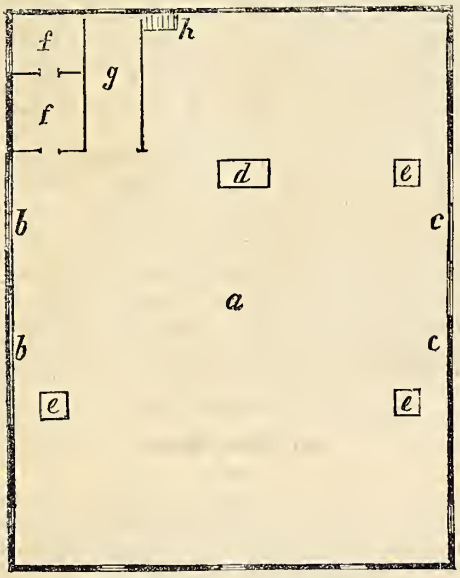


Fig. 3.—PLAN OF BARN FLOOR.

the front pillars to the rear ones. The joists rest upon the cross-sills as far as the latter reach, and then upon the pillars. The cross-sills are 10 inches square. There is thus a drop of 10 inches in the floor upon which the cows stand and immediately behind them. This drop (*h*, fig. 2) is four feet wide, and forms a passage in which the manure collects, and from which it may be pushed through the side of the drop into the basement below. The liquids from the cows drain through this open space on to the manure in the basement. The floor upon which the cows stand (seen at *g*) is 6 feet wide. In front of the basement there is a fenced yard in which is a permanent spring. Here the cattle run for exercise; a passage-way, seen above the arches in the engraving, leading from the stable-door to the yard. There are fourteen stalls for cows, (*g*, fig. 2), each of which is four feet wide. The partitions between the stalls are formed in the manner shown in fig. 5. In each stall is a manger and a

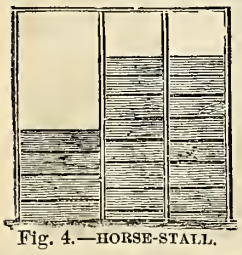


Fig. 4.—HORSE-STALL.

feed-box. The cows are tied with rope-halters around their necks. There is a passage (*f*) between the cow's-stable and the horse-stable (*e*). In the horse-stable there are seven single horse-stalls, and two closed loose boxes. Each single stall is five feet wide. When the horse-stable is cleaned, a wagon is driven into the shed behind it (*b*), the manure is thrown into the wagon, and at once hauled away wherever it may be wanted. The floor of the horse-stable is on the ground. The partitions between the horse-stalls are made as shown in fig. 4. At fig. 6 is shown the crane upon which to hang harness, one being fixed in the wall behind each horse. The post of the crane is made of 3×4 scantling; the ends are rounded and swing in large staples. The arm is made of 1×6 stuff, and is 3 feet long. The shed (*b*) is used for storing tools and wagons, or for housing sheep, and has a door (*a*) at each end. One door opens into a yard, through which the road, seen in the engraving, runs. Here the straw and corn-stalks are stacked, and a great portion of them are here fed to the stock to make manure. No water from the barn runs into this yard, or on to the manure. The stables are 8 feet high, and the barn above the stables is 18 feet high. The plan of the barn floor is shown at fig. 3; at *a* is the main floor; at *b*, *b*, are the entrance doors, to which a sloping driveway, abutting against the wagon-shed, leads. The rear doors (*c*, *c*) are hung upon rollers, and in fig. 1 are seen partly open. At *d* is the trap for hay, leading to the feed-passage below, and *e*, *e*, are traps for straw used for bedding, leading into the stables. The granaries are seen at *f*, *f*, and there are spouts from these leading into the wagon-shed, so that sacks upon the wagon can be filled from the spouts. The passage to the granaries is at *g*; it is 8 feet wide, and a work-bench and tools are kept here. The staircase leading down to the feed-passage is seen at *h*, and also at *i*, fig. 2. The trap-doors are on hinges and are double. The floor is also double, so that no dust can fall through to the floor below, nor any disagreeable vapors arise therefrom. This story is 18 feet clear, the roof being a truss-roof and self-supporting. The roof is shingled with pine shingles, and the whole of the barn is covered with pine weather-boarding, and painted. Mr. Kyle is kind enough to say that he got the ideas for this barn and the manure cellar from the *American Agriculturist*, in the frequent discussions about these matters, although in carrying them out, his plan is wholly his own. After having used the barn, he thinks the arrangements are the best he has seen. There are certainly many excellent points about it, and this description will be of great service to many who are thinking of building barns.

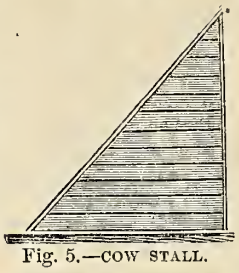


Fig. 5.—COW STALL.

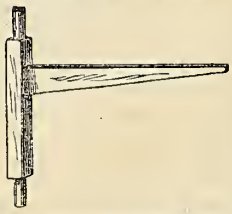


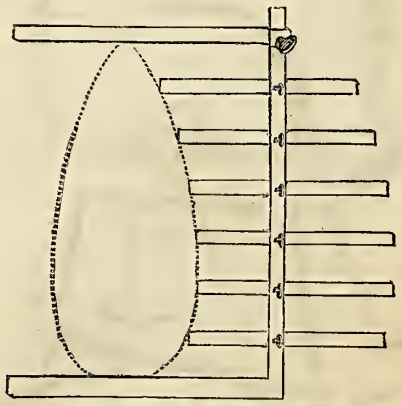
Fig. 6.—HARNESS CRANE.

The Use of Oil-Cakes.

The yearly production of flax-seed in the United States, is about 120 million pounds, or two million bushels. This is almost wholly used for the manufacture of oil. The refuse cake, or oil-cake, left after the oil is expressed from this quantity of seed, amounts to about 80 million pounds, or 40,000 tons. This is nearly all exported, a small part only being used here. The feeding value of this quantity of oil-cake represents about 16 million pounds of beef and mutton, and a large quantity of wool and hides. The loss to the country, through the export of this quantity of a most valuable feeding material, is equal to the profit which would result from the making all this meat, wool, and hides. If the profit upon every pound of meat so made, should be 5 cents, the amount would reach a value of $800,000. In addition to this, there is lost the value of the manure that would be made from feeding 40,000 tons of oil-cake. This is estimated by Mr. Lawes at about $25 per ton of oil-cake. The value of this would be a million dollars, and the total amount of the loss we sustain by shipping away the linseed oil-cake we produce, may be stated at $1,800,000 every year. Through our own want of enterprise, we allow our competitors abroad to make this handsome sum of money every year, out of the materials we furnish to them, and which we might and should use ourselves. But this is not all. The English people are our customers for wheat, corn, pork, beef, butter, and cheese. This they cannot avoid. And the quantity of these necessaries of life we sell to them, depends in a great measure upon the amount of each they are able to produce. The less they produce the more we shall sell to them. The English market for beeves greatly needs a supply from us, but we have not the cattle to spare. In fact we are really helping our competitors to increase their products, and at the same time reduce our own, thus actually, to a considerable extent, destroying our market for what we do produce. This is one of many reasons why our agriculture is not so prosperous or as profitable as it might be, and one of the unbusiness-like ways in which we as a people carry on our farming. But the loss here pointed out, is a very insignificant one compared with that resulting from our method of using cotton-seed. Our yearly product of cotton-seed is about two-and-a-half million tons, or five thousand million pounds. When freed from the husk, or "decorticated," more than two-thirds of this vast quantity is left, which, as an article of food for domestic animals, is of even greater value than linseed. This is equivalent to 700 million pounds of meat, and that remaining in the shape of manure (after having fed the seed and turned it into cattle or meat) is worth fifty millions of dollars. At ten cents a pound for the meat, this product would be seventy millions of dollars, giving a total loss resulting from the want of economical management of the crop of cotton-seed, of $120,000,000 yearly. Some portion of this is saved in the rough method in which the seed is used as a fertilizer in the south, but it is quite reasonable to take this sum as the amount that southern farmers yearly permit to slip through their fingers for want of good business management. No business can stand such waste. The consequence is that southern agriculture is actually the poorest industry in existence, and southern farmers complain of poverty and debt, and vainly try to give their land away to immigrants, from whom they hope for relief. There is an old but true adage about wilful waste, which is applicable here.

Measuring for Horse-Collars.

Horse-collars are rarely made to fit the neck and shoulders of the wearers. It is too often the case



MEASURER FOR HORSE-COLLAR.

that any collar that can be readily procured, is made to serve the purpose after a fashion, and galled necks or shoulders is the usual inevitable consequence. Few farm horses are free from galls

upon the shoulders, and the top of the neck, and these troubles all result from badly fitting collars. When a new collar is needed, it should be made to order, if possible, and the horse measured for it. Every farmer should insist upon this, and every harness-maker should advise it. For accurate measuring of the shoulders and neck, the frame shown in the accompanying engraving may be used. It consists of a square, shaped like an ordinary carpenter's square, made of wood, with a sliding arm at the top, and several other sliding arms, fitting in the post of the square, which arms may be fastened in their places by set-screws. In measuring the horse, the frame is placed on the neck, where the collar should rest, and the upper sliding arm is made to touch the top of the neck, the fixed arm at the bottom resting in its proper position under the throat. The other sliding arms are then pushed forward, until they touch the neck, and are then held in place by tightening the set-screws. The frame may be laid upon a sheet of paper, and the form of the inside of the collar marked out, giving an exact mold of what the collar ought to be, as shown by the dotted lines in the engraving. This easily constructed apparatus will enable the maker to fit the collar exactly to the side of the neck, and to allow for every irregularity of shape.

Forest-tree Planting.

FIRST ARTICLE.

Much has been written upon the rapid disappearance of our forests, and the great waste of timber. Statistics have been presented to show that if the present consumption of timber of all kinds continues at its present rate, the coming generations will suffer from its scarcity, and farmers and land owners are urged to plant trees, if not for their own good, at least for that of their descendants. It has been argued that the rain-fall is essentially modified by the removal of forests, and though this is controverted, those who hold to this view, beg the present generation to plant forests, and thus prevent a large portion of the country from becoming a treeless desert, and prevent the now copious rivers from becoming mere rivulets, if they do not dry up altogether, in the summer, while they from the too rapid melting of the snows, become dangerous from sudden freshets in spring. We are told that trees absorb the dangerous carbonic acid from the atmosphere, and give off healthful oxygen, and that we must have trees if the sanitary condition of the country is to be maintained in the future. There are numerous elaborate essays, addresses, reports, and even books, urging these and other similar reasons why we should plant forest trees. All these are interesting, even if some views of the writers are not accepted, but we doubt if any or all of them will lead, at least in this country, to the planting of a single acre in forest. We say "in this country," because our land is generally held in small parcels, and by men who are all too busy in trying to meet the pressing immediate needs, to give much thought or labor to the welfare of future generations. While our farmers are in their way eminently patriotic, their patriotism does not run in the line of expending much money and work that they may leave their country with as genial a climate, as large a rainfall, as deep rivers, or with as proper an atmosphere as they found it. When these reasons why they should plant forests are presented to intelligent farmers, they will assent to them, but will do no more. There is a great deal of "human nature" among farmers as well as other people, and unless it can be shown that tree planting will be of use to them, and profitable to them in the near future, they will not undertake it. It needs no argument to convince the farmer that trees are desirable, and he does not need to be told that timber in all shapes, and fuel also are of great value, whether to use on his farm, or to turn into cash. He knows that his family, and also his stock, would be more comfortable were his house and barns protected from the sweep of cold winds, and that even his crops would be helped if the force of these were broken. He will even admit, that were he to buy the place upon which he now lives, he would pay much more for it were it well stocked with trees, than as it is now, without them, and yet he does not plant. There are sufficient reasons for this neglect of tree planting, a neglect to which there are many striking exceptions, but it will need the efforts of the various agricultural societies, all the state bounties, and the persistent advocacy of the agricultural journals for many years before tree planting will be regarded in the only light in which it will become general, that is—as a profitable and sure investment, and one which will pay as well as any other farm crop. The farmer must be convinced that, though the returns are not immediate, they are not so far in the future as is generally supposed. This is perhaps what deters persons from tree planting more than any other one thing—the idea that they must wait for half a lifetime to receive any benefit from the work—at least any pecuniary benefit. If it can be shown, upon good authority, that it does not take so very long for a plantation to begin to make returns, and that those in middle life may reasonably hope to enjoy them, and the young men can be well assured that their acres in forest are making a provision for after life, the value of which is annually increasing, no other inducements will be required to make tree planting as general as it is now neglected. In speaking of neglect, we do not mean to convey the idea that no planting is done; taken in the aggregate, area that has been set in forests during the past 10 years, would seem very wide, but compared with that which might have been planted with profit, it is exceedingly small. It is in the prairie regions, where the absence of trees is so marked, and where their want is most distinctly felt, that most of the planting has been done, and it is a common impression that it is only in such localities that forest planting is desirable or profitable. This is a great mistake, for the older states present quite as strong inducements to plant trees as the newer ones; this is eminently the case in New England, where there are so many rocky hills and pastures, and so many fields that are fit for no other crop than trees, and where the markets are close at hand. Our correspondence shows that many would gladly plant trees did they know how to go to work; they are in doubt what to plant and how, whether they shall buy trees or raise them from the seed, and numerous other practical queries which we hope to answer in future articles. In a somewhat extended tour in various parts of the country a few months ago, we had occasion to see various plantations, from the youngest, with trees a few inches high, to the oldest artificial forest in the western states, if not in the whole country; and will embody in these articles the observations made on these visits. We shall not present any arguments in favor of tree planting, except to attempt to show that it is profitable, in the several ways in which we have suggested. We have already said that, in our view of the matter, much of the omission to plant trees is the notion that

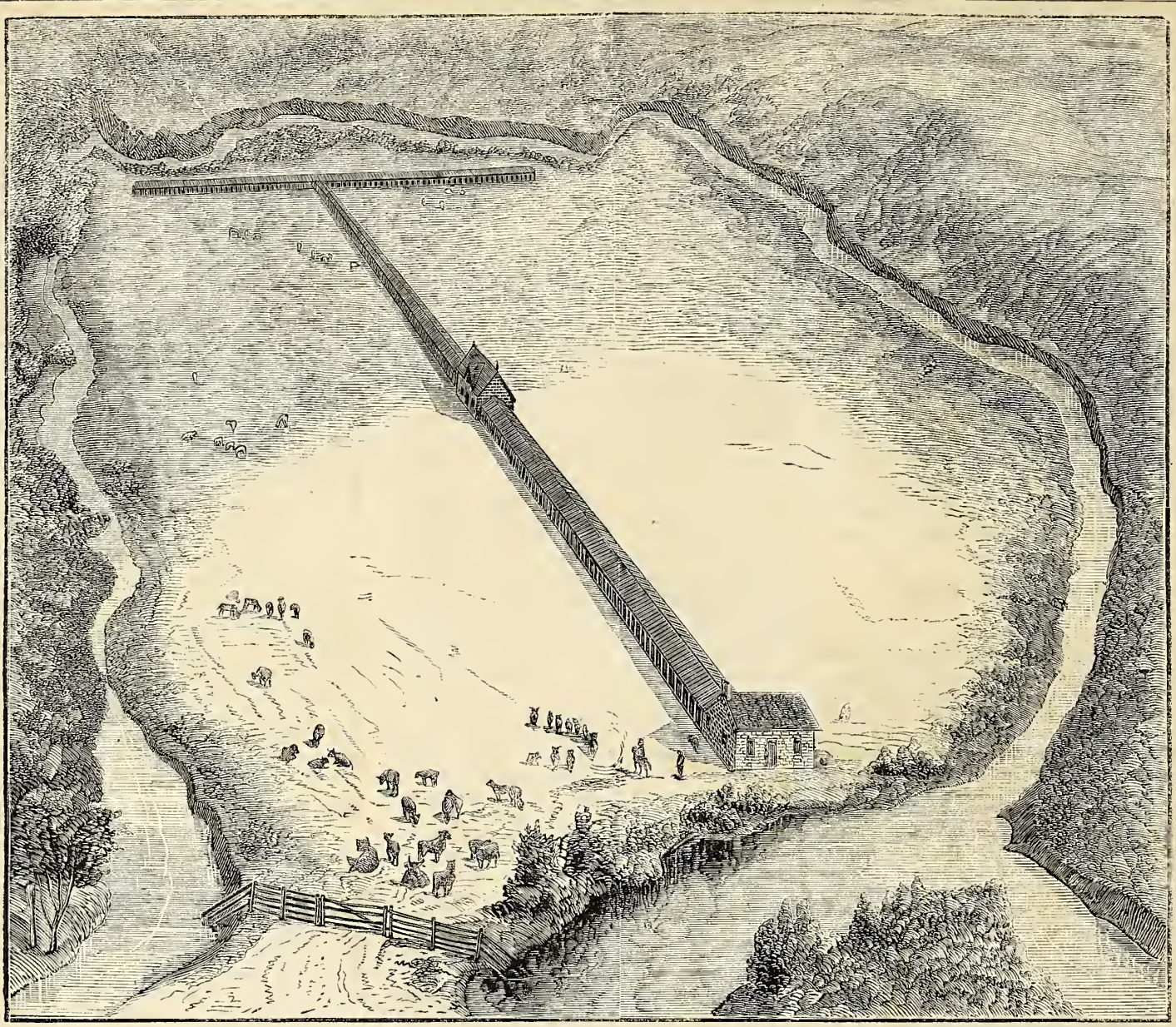
TREES ARE OF SLOW GROWTH.

Of course trees vary much in this respect, and as a general rule the more rapid the growth the poorer the timber; there are exceptions to this, and as will hereafter be shown, there are trees which make good wood rapidly; we take for the present an instance afforded by the European Larch. Several years ago, Mr. D. C. Schofield, of Elgin, Ill., sent us a statement of his experience with the European Larch. When we learned that small trees, which when set were mere whips, about 2 years old, had grown in 12 years to be 30 feet high, and 12 inches in diameter at the base, we were in doubt whether to publish it or not; all that we knew about Mr. S. was the fact that he was a member in good standing in the Illinois Horticultural Society, and it was moreover in his favor that he was a subscriber to the *American Agriculturist*. Later we saw this same statement in a report accompanied by the hint that some allowance must be made for Mr. S.'s enthusiasm; but soon Mr. S. exhibited, at one of the horticultural meetings, one of the trees, which was a sufficient answer to any one who chose to count the rings. At the meeting of the Ohio Horticultural Society, in 1871, Mr. Sherman gave an account of Mr. Schofield's method of planting an acre, which we will not now describe, except to say that the trees were planted thickly, to allow for periodical thinnings; that the income from the first thinning, at the end of seven years, would be worth $120; the proceeds from a second thinning, in another seven years, would bring in $1,000, giving in 14 years, $1,120, while at the end of 30 years, with one more thinning, there would be left on the ground 300 trees, valued at $6,000, which, with the amount received for the three thinnings, would make an aggregate of $8,920, as the returns of a single acre, properly set with larch, at the end of 30 years. All these accounts gave us a strong desire to see Mr. Schofield's acre of trees, and last fall, being within a few hours' ride of Elgin, we visited that gentleman, and saw not one acre, but many acres, and not a mere experimental plot, but a dense forest, with shady avenues, and where nature was doing her own pruning to form clear and stately trunks. We shall have occasion to refer to this plantation again, and do not now go into measurements; suffice it to say that we were convinced that if Mr. Schofield was an enthusiast, it is a great pity that many more were not afflicted in the same manner, and that we were fully convinced that there had been no over-statement or exaggeration in regard to his plantation. If any are in doubt that one in middle life can plant a forest with a hope of seeing a profitable result to his labors, a visit to this plantation would satisfy them. Other trees may yield even quicker returns than the larch, but we give this example because we have seen and examined it. It may be well to state here, that though Mr. Schofield has been so frequently mentioned as an advocate of the European Larch, his forest is by no means confined to this, and he is a great admirer and enthusiastic planter of other trees, both evergreen and deciduous.

The Trailing Arbutus in the House.

The beauty and fragrance of the Trailing Arbutus, or May-flower, (*Epigæa repens*,) are widely known, and many wonder why it is not cultivated, until they have made several unsuccessful attempts to transfer it to their garden. We have transplanted it repeatedly, and always failed. It does not flourish in the same border with cultivated flowers, either in the shade or sunshine. It withers in garden soil. Manure is death to it. Transplanted to the cemetery-lot, the leaves turn brown and die. It is coy under all the wooing arts of the gardener, and delights not in cold-frames or forcing houses. Madam, who is not a gardener, said she could make it live. She knew she could. "She would like to see the plant she could not halter-break, and make it go under saddle." She had a considerable to say about studying nature, the habits of plants, and the Trailing Arbutus growing on the north side of hills, courting the shadow of ledges and creeping under moss and dead herbage. I thought the plants would keep green for a time, and fill a vacant place in the window, even if the experiment added to the often repeated failures. Late in October I procured the desired plants fresh from the woods with a quantity of the leaf-mold, and gravelly soil in which they grew. She put a part of them in the Wardian case in a bed of moss, with ferns, Twinberry, Adders-tongue, and other plants that love the shade. The Arbutus took kindly to the new atmosphere, and very soon began to make new shoots and leaves, and it is now the gem of the collection, and the admiration of the household. The other plants were put in a bed of leaf-mold in a soup-plate, two or three inches deep, and club-moss was trained around the edge of the plate for a border, making the dish a very pretty ornament. This dish has been kept in a room without fire, at a temperature varying from forty to sixty, under shelves appropriated to other plants. It does not receive the direct rays of the sun, but has plenty of light. It is watered two or three times a week, and the mold is kept moist. The plants evidently think April has come, though it is mid-winter, for the leaves are starting and the pink blossom buds are in sight. We give it up—Madam has a triumph.

CONNECTICUT.



CATTLE CORRAL, VICTORIA COLONY, KANSAS.—*Drawn and Engraved for the American Agriculturist.*

The above engraving is a representation of the corral, or enclosure in which are kept the calves of the large herd of native and thoroughbred cattle belonging to Mr. George Grant, of Victoria, Kansas. When this is completely finished, it will afford shelter for 1,000 head. The sheds, each 1,200 feet long, and 24 feet wide, are built of stone and wood, and are roofed with 12 inch boards 12 feet long, sloping each way from the center. The center wall dividing the sheds, is of stone, and 8 feet high. At one end is the herder's cottage, and near the center is seen the stable in which the thoroughbred calves are housed, and over which is a hay-loft. The whole corral is surrounded by a naturally impassable barrier, consisting of the steep bluffs of a bend of a fork of the Victoria River, except in one narrow neck where are the fence and gateways. The inner bank slopes gradually, by a clean gravelly shore, to the river, upon the opposite side of which the bluff rises so steeply as to be impassable for stock. This spot, fortunately so admirably suited for the purpose to which it is now applied, has a historical interest, it being the site of the old Fort Hays; this, not many years ago, was in the center of the Indian country, and has been commanded by Gen. Sherman and Gen. Custer. Thus the appliances of war are here usefully turned to the arts of peace, and calves now feed where once cavalry horses grazed. The river banks are high and well timbered, and afford excellent protection to the enclosure. Mr. Grant's herd consists of several hundred native cows, and some of the best bred Shorthorn and Polled Angus bulls. The sheep corral previously described and illustrated in the *American Agriculturist*, (June, 1875), is some miles distant from the calf corral. Since describing the sheep corral, we have learned that the large flock of over 7,000 sheep is in the best condition, the sales of wool in 1875 netted over $6,000, and the lambs more than paid the whole expenses of the flock. We have also from Mr. Grant the following figures, showing the cost and proceeds of the crops of hay, grain, and fodder, raised at Victoria in 1875, viz:

EXPENSES.

Sundry expenses	$ 833.97	
Seeds	770.14	
Labor	2,096.99	
Horse-feed	1,041.36	
Management	2,136.58	$6,879.04

RECEIPTS.

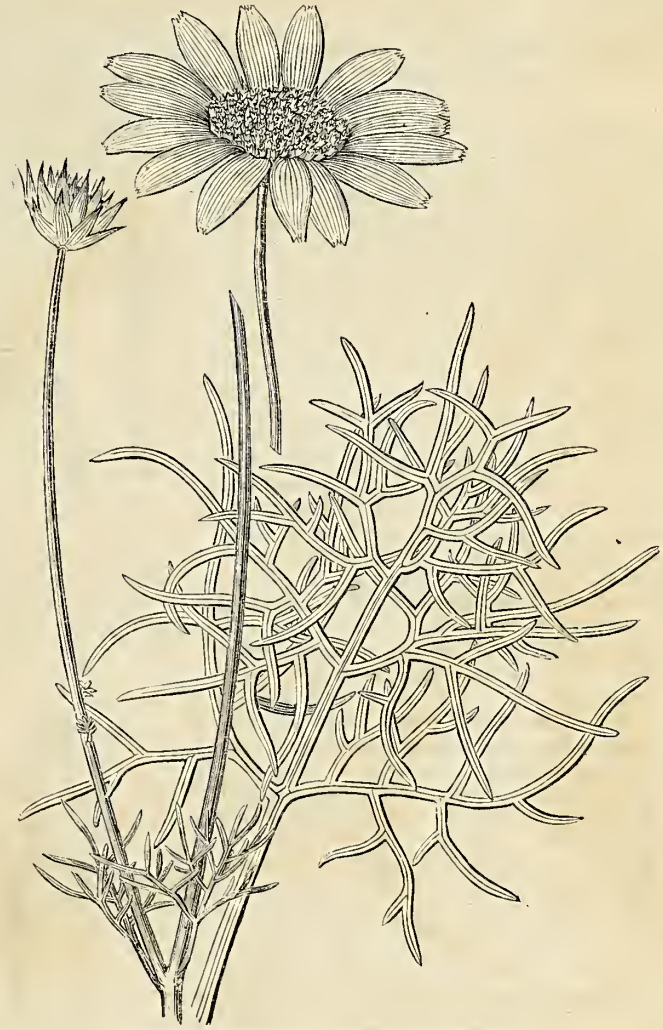
Cash sales	$ 720.74	
Seeds on hand	394.95	
1,791 bushels rye	1,074.60	
384 bushels oats	134.40	
114 bushels Hungarian grass	159.60	
468 tons Hungarian hay	7,020.00	
100 tons prairie hay	500.00	
400 tons rye straw	1,200.00	
55 tons oat straw	165.00	11,369.29
Profit of crop		$ 4,490.25

The receipts might have been largely increased had all the grain and seed been thrashed, but a very large quantity was left in the straw and hay. The crops are credited at the price at which they are charged to the stock when fed. These prices are comparatively low, and the winter's keep of a sheep upon the fodder amounts to less than 60 cents per head. The enterprise of Mr. Grant has abundantly proved that stock keeping in western Kansas may be made very profitable if rightly and intelligently managed. Several young men who have purchased tracts of land in this colony, among whom are two sons of Ex-Mayor Gunther, of New York City, are doing well with their flocks. A number of young English gentlemen have also settled in the colony, and are succeeding well with their cattle and sheep, and their farming enterprises. This successful experiment of Mr. Grant shows conclusively that stock-keeping on the western prairies, which were once supposed to be fit only for buffaloes and Indians, may be made very profitable, if carried on with sufficient skill, industry, and capital. But it would be wrong to encourage the idea that any person empty-handed, may safely enter into this pursuit with the expectation of making money. Permanent shelter and some provision for winter feeding are required, and a certain amount of capital is needed for these. $5,000 at least would be needed to enter this business safely, and to provide means by which risks may be avoided.

The Entire-Leaved Cleome.

Several years ago a person "out-west" advertised with considerable flourish the seeds of "prairie flowers," and published a catalogue of them which fairly bristled with long botanical names, which no doubt gave to many the impression its author must be very learned, and the plants very fine. It came in our way to let the gas out of this bag, and to show that it was an attempt to pass off the veriest possible trash, (horticulturally speaking), upon those unfamiliar with botanical names, and we are glad to know that by putting unsuspecting seedsmen on their guard, they were prevented from selling the seeds, and thus disappointing their customers. Still, amongst all this rubbish, there could not help being some desirable things, one of which was the Entire-leaved Cleome, a very showy plant found from Nebraska southward to New Mexico, and westward to Oregon. The plant does not seem to have any common name; *Cleome* is an old name from a Greek word, meaning *closed*, which was long ago applied to a species found in the south of Europe, and though no one is able to see how it applies to these plants, it is a pleasant sounding, easily remembered name, and will answer quite as well as any. The genus, *Cleome*, belongs to the Caper Family, of which the majority of our representatives are annuals; there are three or four species in this country, the best known of which is the one here figured, the Entire-leaved Cleome, (*C. integrifolia*). This is a much branching annual three or four feet high, with compound leaves of three entire leaflets. Each branch is terminated by a raceme of showy pink or purplish-pink flowers, which keeps on elongating, the flowers opening in succession for a long time, so that when the pods from the first flowers are ripe, new buds are just appearing above to prolong the bloom. Those who examine the structure of flowers will find these of considerable interest, as the pistil is raised up in the center of the flower in a manner quite unusual. The foliage of this, as well as in other plants of the family, has, when bruised, a peculiarly pungent odor which is not pleasant. Seeds of this and of a related plant, *Polanisia*, were at one time offered as remarkable honey producing plants, but we have not heard that they have been cultivated to any extent to afford pasturage for bees.

ENTIRE-LEAVED CLEOME.—(*C. integrifolia.*)



SEA-SIDE COREOPSIS.—(*Leptosyne maritima.*)

The Sea-side Coreopsis.

In noticing desirable plants, we as a general thing confine ourselves to those which are readily obtained from either the seedsman, florist, or nurseryman, and if we depart from this rule it is when, as in the present case, a demand for the seeds can be readily supplied, and if the seedsmen do not have them, they can easily procure them. We have called this plant a Coreopsis, but it has had considerable trouble in the way of names; it was discovered over 30 years ago by Nuttall, near San Diego, Cal., on rocks overhanging the sea, and considering it a new genus, he named it *Tuckermannia*, in honor of Prof. Tuckerman, now of Amherst, but then a young botanist of great promise, and gave it the specific name, *maritima*, on account of the locality in which he found it. Later, Prof. Gray, finding that the plant was not different from an earlier genus of De Candolle, *Leptosyne*, (from a Greek word meaning *slenderness*), called it *Leptosyne maritima*, but now, worse than all, here come Hooker & Bentham, who say that the thing is not sufficiently distinct to be kept out of *Coreopsis*, and if they have their way it will be neither *Leptosyne* nor *Tuckermannia*, but *Coreopsis maritima*. It will be seen in another article, that Prof. Gray sticks to *Leptosyne*, and doesn't follow Bentham & Hooker, and we shall leave these giants to fight it out, though in this Centennial year we shall take the say of an American botanist for an American plant, so far as the scientific name is concerned, and hold to *Leptosyne*, but as a sort of compromise, we will use Coreopsis, which is sufficiently common to be regarded as English, for the popular name, and call it Sea-side Coreopsis. The plant is especially noticeable for its elegant habit; its smooth, handsomely and finely divided leaves are all near the base of the stem; the flower stems, only about a foot high, bear heads of yellow flowers, much like those of a large Coreopsis, which are over two inches in diameter, and are produced in continued succession all summer long, and if placed in the greenhouse, will bloom all winter. The plant is rather fleshy, and does not like wet, and like some other California plants, it thickens up the base of the stem to form a sort of a tuber, which should be taken up and treated like a Dahlia root. This species was introduced into cultivation by Nuttall, soon after he discovered it, but it was lost for many years, but has recently turned up again, and the seeds may be

had of the California seedsmen. A few years ago Dr. Kellogg discovered another species, *L. gigantea*, upon the islands off the coast of California, which, from the description, must be a fine plant; he sent seeds to eastern friends, but no one, so far as we have learned, has succeeded with it here, though it does well in the gardens of San Francisco.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE II.—"COMPOUND FLOWERS."

Dandelions, Sunflowers, Thistles, and the like, are troublesome to very young botanists, who hardly know what to make of them. They were equally troublesome to the old botanists of a hundred years ago and more. They tided over the difficulty by naming them "compound flowers," and the name still holds, more or less. But the botanist now-a-days brings the thing to a head, and, except in deference to an old fashion, would no more speak of a compound flower than he would of a compound sheep. He will have you clearly to understand that it is a cluster of flowers, the green leaves around which may imitate a calyx, while some of the blossoms of the cluster, or all of them, may imitate petals, and so the whole look like a flower, and answer for a flower, for ornamental purposes—seem to be one, while it is really a multitude. It is a sort of "*e pluribus unum*"; and now, that being understood, the question arises, what is the good of it? Unions—national, individual, or of whatever sort—are for mutual advantage; and I am to show that this is true of such close unions as these, of many blossoms into what has often been taken for one.

To make a fair start, we must begin where we left off in the first article, about Bell-flowers. The Bell-flowers, we found, have a way of discharging all the pollen of their anthers, and loading it upon the style, where bees can help themselves to it, and convey part of it to the stigmas of another blossom. And in the last one of the Bell-flowers illustrated, the anthers were united in a tube around the style, at first enclosing it; then, when the style had got its load of pollen, it lengthened below, and so pushed up the pollen-laden portion into sight, and where it is convenient for the bees. Now in "compound flowers," almost exactly the same thing is done in almost the same way, but yet with a difference.

Each one of the central flowers which fill the center of a White-weed or Sunflower, is much more like a Bell-flower, except in size, than would be supposed without a close inspection. To show what is meant, instead of a Sunflower or White-weed, I take something much less common, merely because it is now before me, and is of convenient

Fig. 1.—HEAD OF LEPTOSYNE.

size, the parts being a good deal larger than those of a Whiteweed. It is a handsome plant which grows along the sea-shore in the southern part of California—*Leptosyne maritima* is its name—and as to appearance, it might be a large yellow *Coreopsis*, the difference being only one particular, which will be mentioned presently. Fig. 1 represents a flower-head of it, of the natural size. In fig. 2, we have, a little enlarged, one of those fourteen or fifteen "petals," as they would be called at first sight by one who did not know better; also one of those bodies which fill the whole center. Both have, we see, a forming seed-like fruit or grain at the bottom; otherwise they appear to be not much alike. Regarding for the present only the slender left-hand one, we observe that this is a perfect flower. The "grain" at the bottom is the lower or seed-bearing part of the pistil; on it rises the slender corolla, five-lobed at the top; out of this projects the five anthers joined in a tube, just as in the "*Symphyandra*" Bell-flower of the former article; and out

Fig. 2.—A MARGINAL AND CENTRAL FLOWER.

of this projects the tip of the style, here 2-forked, or with two stigmas, instead of three. To make all plain, take two of these flowers (fig. 3 and 4), both younger, and magnify the upper part with a com-

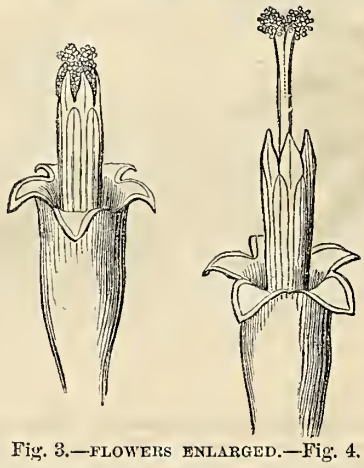


Fig. 3.—FLOWERS ENLARGED.—Fig. 4.

mon pocket magnifying-glass, fig. 3 shows a young, and fig. 4 an older flower; now the likeness to that particular sort of Bell-flower begins to show. Here there is no need to slice down the corolla, for the parts concerned project well out of it as soon as the top of the corolla opens. In fig. 3, the younger, we see the tube of anthers with a heap of pollen at the top. In fig. 4, showing the same flower a day older, the style has lengthened and projected; its tip is seen to be a two-pronged brush; at the beginning it was at the bottom of the anther-tube. But gradually lengthening by growth below, it was pushed up through the tube, driving all the pollen before it; much of this still sticks to the rough, brush-like tips in fig. 4; by the next day these open and recurve as in fig. 5, (more enlarged); and the stigmas, on which the pollen acts for fertilization, occupy the inner or now upper face of these two forks.

Now we have only to notice that these flowers open in regular order from the circumference to the center, and are a week or more about it. At the time when the outermost and earliest are in the condition of fig. 2, and the style as in fig. 5, *i. e.*, just ready to receive pollen, the rows next within will be in a condition of figs. 3 and 4, *i. e.*, ready to supply pollen, but not to use it; and so on in succession through to the center. Possibly the wind may blow some of this pollen from the one to the other; but the grains are slightly moist and viscid, so this is unlikely. But flying insects of all sorts visit these flowers, either for a little nectar or for pollen; these, as they crawl over the tops of the thickly crowded blossoms, carry the pollen from flowers that are ready to give, to others ready to receive it, whenever they move from the center towards the circumference. And when they fly from one flower-head to another, they produce still wider cross-fertilization. Now and then a flower will be likely to be fertilized by its own pollen, but not often. The arrangement evidently is for cross-fertilization; and the advantage of this close association of many flowers, which was the problem in hand, is found in the great facility it offers for co-operation in this matter.

Fig. 5.

But why the more showy flowers surrounding the whole, with a great flag-shaped corolla, turned outwards, so as to look like petals? And why have these flowers, (as we see in fig. 2), only a pistil and no stamens? To answer the last question first; as they are the outermost and earliest, they could not supply pollen, if they had it, to any of their associates; and they are themselves promptly fertilized by the adjacent and earliest perfect flowers that open. There is a saving, therefore, in their being pistillate or female only. As for the large corolla, that is a conspicuous and bright-colored flag, hung out for show—not for a vain show, but to attract insects from a distance.

Sometimes these large and petal-like marginal flowers are merely for show, having no pistil, or a mere vestige, being reduced in fact to a flag-shaped corolla. This is the case in Coreopsis and Sunflower. In others they are wanting altogether, and the perfect flowers take on the duty of attraction as well as of seed bearing—sometimes by their corollas all becoming flag-shaped or strap-shaped, as in Dandelion and Chicory.

So a "compound flower," is an association for mutual advantage. It is sometimes one, like primitive society, in which all the members have the same office and do the same work; while others have reached the more advanced state, in which the work is divided—some individuals taking the ornamental part of the work, some indeed becoming merely ornamental, but still useful.

Since we have come to understand this, there is no need, and we have no reason, to suppose that any members of the floral society, or any parts of a blossom, exist for beauty's sake—as some have thought. They are beautiful that they may be attractive, and attractive that they may be useful. If in some cases "they toil not," the glory in which they are arrayed is not for self-glorification, but for the good of others.

Bunching Asparagus.

Asparagus for city markets must be neatly bunched; in villages we sometimes see it offered for sale loose, but in cities it could hardly be sold in this condition. Bunching is slow work, and difficult to do handsomely without some contrivance to hold the shoots while they are being tied, and to secure uniformity in size. The old buncher, (fig. 1), is better than nothing. This consists of a board with four pins 6 inches long, and placed about 4 inches apart each way, to form a square. Two strings, usually of bass matting, are laid down on the board, which may be set on a bench up against the wall, or have a back made of another board

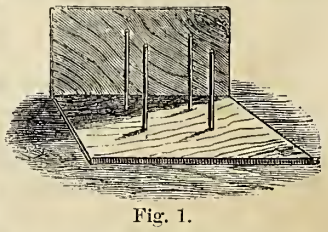


Fig. 1.

tacked on it at right angles. The asparagus is laid on the buncher between the pins, the tops touching the back or wall, to keep them even. When the bunch is large enough, the strings are tied tightly, and the but-end of the bunch cut square; one string is near the bottom, and strong, the other near the top, may be smaller. There are several mechanical bunchers, the best we have seen being that invented several years ago, by Mr. S. B. Conover, who has since then considerably improved it. The engraving, (fig. 2), shows the construction; the asparagus is placed in between two brass strips,

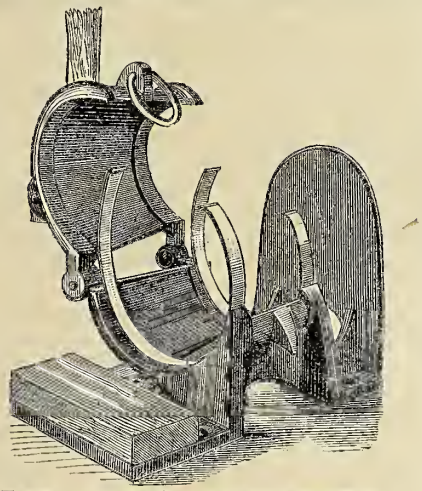


Fig. 2.—CONOVER'S ASPARAGUS BUNCHER.

the hinged part of the buncher is brought down by means of the lever, and held in place until the strings are tied. The bunch is usually 4 or 5 inches in diameter, and 8 inches long, the size being usually smaller early in the season, than later. Not only does care in bunching pay, but so does care at every step. In cutting do not long expose the asparagus to the sun, or it will curl up. Before bunching wash carefully in clean water. Do not bruise the tops. *Assort* carefully, making two sorts as to size, and pack the bunches of the firsts and seconds separately. If the tops of any shoots have "broken," or grown too much, do not bunch them; they injure the sale, but eat them at home, and thus have the best. Keep the bunches always upright, and if to be kept for some hours before packing, stand them on wet hay in a cool, dark cellar. Pack upright in crates as high as the bunches. If to be sent to a distant market, set the bunches on wet grass and see to the ventilation.

An Iowa Gardener's Success.

If we say that two men fail in gardening where one succeeds, the estimate will no doubt be within the truth. By gardening, we here refer to that which is carried on with a view to profit, whether in raising vegetables or small fruits. The reasons for these failures are to be found in the fact that so many undertake gardening without any previous experience, and with too great expectations. They read Mr. Peter Henderson's account of having an average net return of $300 per acre for celery, and Mr. William Parry's statement of a similar profit from strawberries or other small fruit, and take up pencil and paper—5 acres of celery at $300=$1,500 profit—4 acres of spinach at $300=$1,200—5 acres in miscellaneous vegetables at a profit of at least $200, or $1,000—in all $3,700 profit. It is equally easy to make the same number of acres pay—*on paper*—a similar profit on strawberries, raspberries, and other small fruits. Calculations of this sort are made over and over again by clerks, bookkeepers, mechanics, and others, who have heard of the success of others in gardening, and who can see no reason why they may not reap these profits, and they are most frequently made by persons who never grew a celery plant, and hardly know a blackberry from a raspberry bush. Such persons of course fail, and then blame those who have written about such matters for misleading them. They forget that the success of such men as Henderson, Quinn, Parry, and others, have been by beginning small, and only enlarging as they acquired experience—and while their experience, as recorded in their writings, is of the greatest value to others, another can not, no matter how faithfully he studies it, appropriate it and substitute it for his own. While we would not discourage those who would undertake any form of gardening, for we believe that there are abundant opportunities all over the country for those who will undertake it in the right way, we would repeat a warning already given more than once, and which needs to be frequently given—go slow until you know the road. Gardening on paper is easy—gardening in the garden is not easy, but it can be made successful and profitable, where there are brains to properly direct the hands. Failures from over sanguine estimates by inexperienced persons, are so common that one need not go far to find them—but as an illustration of what may be done by beginning properly, working patiently—profiting by mistakes, and, what is quite as important as anything, adapting the culture to the locality, we give

Mr. B. Kemper's Experience,

condensed from the notes he sends us. Mr. K. lives in Muscatine Co., Iowa, but his business, coopering, being dull, he bought a few acres of land, to raise vegetables for a neighboring market. He says: "The first two years I did not make much progress, as my land had been poorly cultivated, and with an abundance of weeds. I have learned by experience, that to raise nice vegetables and make gardening profitable, you must as much as possible raise your own seeds. I buy a great many seeds, but they often fail, until they become acclimated and adapted to our climate and soil. [An important point with many plants, but one which few think of. ED.] I use my own seeds, when possible, for such sorts as there is the greatest demand for in our market, such as cabbages, tomatoes, sweet corn, and sweet potatoes. My early cabbages are mostly "Fottler's Drumhead"; this heads with me as early as the "Early Wakefield," and by letting it stand a week or ten days longer, each plant will become a good solid head, weighing from 5 to 25 lbs. When I commenced gardening, I bought several different kinds of tomato seeds, of which I found the "General Grant" the earliest and most productive. I always take my seed from the first and nicest tomatoes. I also have the "Boston Market," the "Trophy," and "Canada Victor," which did not prove very successful last year, but I shall give them another trial. I put out seven hundred of the "Genl. Grant" plants, which brought $250, though I sold the most of my tomatoes for 25 cents a bushel.

I planted several varieties of sweet corn side by side, and gave them the same culture, some kinds brought very small ears, others mostly ran to suckers. I saved seed of this, and the next year tried more kinds, among which was the "Adams' Early," which had good sized ears, but was not sweet. I raised it along side of the others, and the kinds mixed and turned out to be early, with nice large ears, having from eight to twelve rows. For the last two years I have planted none except seed from ten and twelve rowed ears, and have so improved the corn and land, that it brings 14,000 salable ears to the acre. My corn sells well on account of its earliness and size, but I have no name for it. It is excellent for shipping, because of its small husk, and is more profitable than my pure sweet corn, which I made on the same principle, and sold of it until the "Evergreen" came in. Four years ago I tried the "Early Concord," it had a little larger ear, but it was not so early and productive as my own. I also tried the "Early Success," which I saw advertised in your paper; it was planted at the same time with my early corn, and when I picked mine, the "Success" was just silked, and only had one ear where mine had three. It had a fine flavor, but I brought my late corn to market sooner, with from twelve to sixteen rows, while that had only eight. Last season I tried the "Early Minnesota," this proved a week later, it was excellent in flavor, but had a small ear, with red husk, silk, and cob, which did not suit my customers. [There is something wrong about this; the "Minnesota," which we have grown three years, originally from Vick, has a white cob, and is the earliest really sweet corn, with a good sized ear, that we know of. ED.] I drill in my corn in rows four feet apart; this gives room to go through the rows with a horse and cultivator, after a hard shower of rain; when it is three inches high, I take a double shovel plow, with small shovels, and throw earth close to the corn, so that all the weeds are covered. (I do not mean the coarse weeds, as I have no other than Purslane). In about a week I throw up more earth. I put in enough seeds to allow for what stalks may be damaged by cultivating. When the corn is 7 or 8 inches high, a boy thins it out, so as to leave a stalk every 4 to 8 inches, at the same time pulling out any weed stalks. Covering the lower joint of the corn when it is small, gives it more root and less suckers, and promotes its earliness, so that it is generally ready for market the first week of July. I raise nearly all varieties of vegetables, and always sow in drills, even such as melons, cucumbers, and beans, so I can go through them with a horse and cultivator. The prices of vegetables here are so low, that it does nor pay to hand-hoe them. I am often asked how I keep the weeds down; my soil is light and sandy, and I make a shallow furrow and drill the seed in it, and cover with a hand-cultivator; when the plants are up, I take a small one-horse harrow, with handles like a plow, so that I can harrow very close up to the row, and throw earth into the furrow. I am careful to buy my seed from first-class dealers. My garden consists of 15 acres, and on most of it I raise two crops, and do the work with my boys, the oldest of which is 16 years.——This is an account which inexperienced gardeners may read with profit, not so much that they may follow precisely in the ways of the writer, for these are not suited to all localities; but it shows that the writer has his heart in his business, and if one thing does not suit him, he tries again, and is bound to get a variety that will be best for *him*. We have not space to add his commendatory words in relation to the *American Agriculturist*, to the teachings of which he attributes a large share of his success. He thinks if all engaged in cultivation of any kind, should take it, "it would in many cases save them trouble and expense,"—a point on which we agree with him.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Home Topics.

BY FAITH ROCHESTER.

"That Boy!"

Of course there is a difference in boys, but isn't your healthy, wide-awake boy a rather noisy animal? If he has to spend a day in the house, doesn't he worry and tire you half to death? His voice is seldom "low and sweet," and his footsteps are all emphatic. These growing boys are hardly suitable for house-pets, certainly. They can't help it, and we ought not to expect them to change their nature. But oh! for patience to bear with them. And oh! for wisdom to do for them just what is needed for the proper cultivation of their natures. Their mischief and their scrapes are often simply the result of unemployed steam which they have no power to repress, and for which there is no proper work supplied. The boy who hectors and pushes and pulls the sister whom he dearly loves, is really suffering for somebody or something to wrestle with. He needs again and again to test his power. He wants something that he can kick with all his might, something to jerk about, something to command. These things are not especially manly, but they are among the instinctive workings of the boyish nature when it is full of animal vigor. There is, no doubt, scope for all this youthful activity and love of enterprise in the general economy of nature, if we can only find out and fall in with her plans. If we can only furnish attractive work which will meet a boy's necessities in the

way of kicking and pushing and pulling and shouting, it will be a great gain; but attractive play which meets these necessities is not to be despised.

Dear little fellows! They seem so naughty, at times, to one who has had little experience among boys. But when your boy's noise is hushed at night, when the busy feet and hands are still, and the active inquisitive brain is resting in slumber, does not your mother-heart go out in strong love and sympathy for the little fellow? He is all right, after all. That is, he is what it is natural that he should be, and you would not exchange the spontaneity of his present style, wearisome as it often is, for a sober, care-taking, inoffensive kind of boy, always mindful of his tones and steps, and schooled in all conventionalisms.

How he does eat! When he is hungry he is fearfully so, and he is inclined to eat much and fast, with little attention to manners, except as he gets line upon line, and precept upon precept. I know of people who would tame these noisy active boys, and bring them into quiet subjection, by starving them to it, or by limiting their daily rations in such a way as to keep down most of the bounding life that makes the vigorous healthy boy such a lively specimen as he is. Such well-meant methods seem to me fraught with evil. No. Let young growing animals have all of the plain wholesome food they desire at their regular meals, and give them a free field in which to caper and grow. True, they must learn to work in harness, and the training should be begun early, but it should have small beginnings. Through all of childhood and youth, a boy has a right to daily play-spells; longer and more frequent the younger he is. Indeed, I believe that all of us have, "in the nature of things," a right to daily "play spells" of some kind, whatever our age.

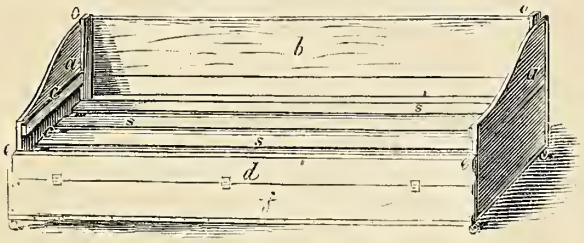


Fig. 1.—FRAME OF LOUNGE.

Farmers have so many little tasks and bigger jobs that boys can be kept at, that they need often to consider what is reasonable treatment for calves and colts, and to reason from this what is the proper physical training to give boys.

"Dr. Spanxter."

You never read Rose Terry's capital little story by the above title? More's the pity. I have read it half a dozen times to my children, who "see the point" every time. We have it in an old number of "*Our Young Folks*," and I should like to put it where all parents could have access to it. I wonder if H. H. ever read it? I suppose she would have all the children so judiciously trained from the first that little "Prince Pucker," crying his eyes out for the moon, would be an impossibility, and so perhaps there would be no necessity for summoning Dr. Spanxter. But "there's the rub." Judicious training from the first doesn't seem to come natural and easy to some of us mothers. Our hands are full of every thing else, and we fail to see the first steps of training, and presently find ourselves confronted by a small rebellion, or by persistent and unreasonable naughtiness, which must be put down immediately; and in our harrassed condition, it seems necessary to stop the child's nonsense, and teach it a lesson in behavior by the speediest process. Hence the popularity of Dr. Spanxter, or Dr. Birch, as the physician of the rod was called in the days of my youth. I surely believe that these old-school doctors, with their shingles and their whips, are doomed to pass away; and I doubt whether they do as much good as mischief even now. But I suppose we can not spare them yet.

When Dr. Spanxter found that his brief prescription for the prince who had cried himself sick, because no one would give him the moon, "Spank him!"—was only carried out with a polished dainty little shingle, trimmed with swan's down and jewels, which only tickled the little prince when administered gently by his royal father, he was justly indignant. He tossed the silly weapon through the window, and pulling a genuine shingle from his pocket, spanked the prince so soundly that he needed but one repetition of the dose,

Nevertheless, it seems to me that the kiss and the blow need hardly be separated. It does not injure the moral effect of a sound spanking, to hug the little sufferer in your arms immediately afterward. The child does not understand by this that mamma is sorry she spanked it, but only that she still loves it, and, though she had to resort to the only effective argument at hand, she is willing to cut short or relieve its pain. They ought to feel that mother punishes *because* she loves them, and because she cannot let her darlings be naughty, disobedient children, or grow up with bad habits. It is sad for children to suppose that their parents punish them because they do not love them, or are simply angry with them. I am very sure of one thing, and that is, that preventive measures are better than measures merely curative, however gentle these may be; and among preventive measures, attention to a child's health is as important as gentleness and firmness in its government. An important matter to young and old is

Ventilation in Winter.

It is impossible for us to suffocate ourselves in our dwelling rooms, unless extraordinary means are used to bring about such a result. The pure air will creep in through divers cracks about the windows, doors, and floors, in spite of all our efforts to "keep out the cold." It is all right to try to keep our rooms warm, and it is very proper to chink up the cracks, but we should see that some provision is made for the entrance of pure air. Though that which enters unavoidably through cracks, and by the frequent opening of the doors, may keep us from actual suffocation, it is not usually enough to keep the air of the room pure, and its inmates in high health. It sometimes seems as though people study to see how little pure air they can live upon. They allow of various needless contaminations of the air, saying, in answer to one's objections, "Pooh! I guess that won't kill anybody!" As though this is the main object in seeking pure air—merely to escape the point of death.

Many persons suppose that nothing impairs the air of a room, unless it be something positively poisonous, as, for instance, the effluvia of decaying animal or vegetable matter. This is not so. Wherever there is any permanent odor, though it may be only the fragrance of flowers, or the smell of oranges, the air is in some degree less pure than when positively odorless; and though sweet odors give pleasure at times, and in moderate degree, they should be sparingly used, and banished entirely during our sleeping hours. Bridget, in the kitchen, breathing more than half her time air loaded with the odors of the various kinds of food, and an occasional variation of scorched fat, may seem to be a tolerably healthy person, but in spite of her exercise and good constitution, she is less healthy now, and more likely to suffer from various diseases, and to die in early life, than she would be if she had really pure air to breathe, in her kitchen and in her sleeping-room. No one, however constitutionally endowed with health and strength, can enjoy the *finest* health without pure air to breathe habitually. The more one becomes accustomed to pure air, the more quickly is any contamination perceptible, and cleanliness in all respects seems more and more desirable.

"I believe you let too much air into your room at night!" I have more than once been told. "Too much air!" Is that possible? I would let in all out doors if I could, when the outside air is not unduly moist or cold. I prefer not to have the wind blow upon the back of my head, but if it only blows into my face, and I am otherwise well protected, I do not care. I have two windows open in all moderate weather, in the large room where I sleep with the children this winter. In all weather there is one unclosed opening which supplies pure air from out-doors. This is made by raising a window six inches from the bottom, and filling the opening so made, below the lower sash, with a closely fitting board. The air enters through the spaces between the upper and lower sashes, and however strong the wind comes from that quarter, none blows directly upon a person sitting near the window. This suffices for ventilation in the coldest weather, but I am always glad when it is warm enough to allow of letting in more air.

Sleeping Warm.

I believe it is impossible to have too much pure air, but it is possible to have the air colder than feeble persons can breathe with comfort or with safety. For hardy persons there is no danger in cold air, provided they have plenty of bed-covering, and keep their mouths closed. It is unwholesome for any one to sleep cold. One of the hardest things for feeble persons to endure, is getting into a cold bed to sleep. It draws so much upon the already low vitality, that before the cold bed is warmed, its occupant is so thoroughly chilled that it is almost impossible to get warm again. In this way the system is unnecessarily taxed, and the general health reduced. When one must sleep in a cold room, it would be better to wear flannel night clothes, (warmed before putting them on, and perhaps with woolen stockings for night use in exchange for the stockings worn all day), or to have the bed warmed before entering it. This can be done with a warming-pan, or by rolling a jug of hot water about between the sheets.

I find by experience that children rest more quietly in rooms well ventilated, though the air is quite cold during the night, than when they sleep in warmer and closer rooms, and I think it well to accustom their lungs to cold air in this way. It is very undesirable to make hot-house plants of our children. They should be dressed so warmly, both by night and by day, that they can be comfortable in rooms moderately cool.

The "Centennial" Extension Lounge.

BY E. O. LEE, GLOUCESTER CO., N. J.

In the *American Agriculturist* for March, 1873, is a description of an extension lounge, which "is a very convenient thing to have in the house," especially when the house has only two rooms on the ground floor, and one craves the luxury of sleeping

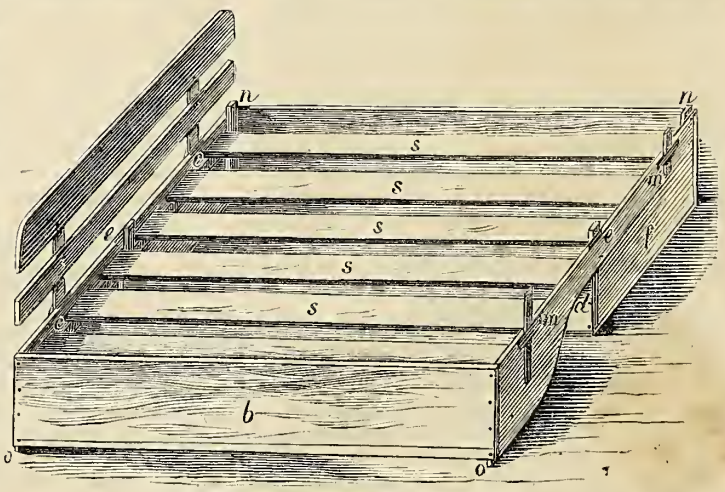


Fig. 2.—THE LOUNGE AS A BEDSTEAD.

near the sitting-room fire—still I have hit upon a plan which suits me better, the construction of which is shown in the accompanying sketches. Dimensions of lounge 2 feet by 6; hight of box 13 inches. Figure 1 shows the frame of the lounge complete, and fig. 2 the bedstead. *A*, arms; *b*, back; *c*, cleats on which the slats, *s*, rest; these slats are five inches wide, and ⅝-inch thick, and of oak; *d* is a board five inches wide, hinged with leather, and held in place by a small hook at each end, to be let down when the lounge is extended, as shown in figure 2. Small strap hinges are shown at *e*; *f* is the box for the bedding, head-board, etc. The head-board is made of half-inch boards, nailed to oak cleats ½ by 1½ inch, and held in place by clasps, as shown more plainly at *m*. The ends, back, and bottom of the box may be made of ½-inch boards, except a strip 5 inches wide at the top, which should be one inch thick. The corner pieces, *n*, should project at least half an inch, to support the back of the lounge, the corners of which should be correspondingly short. The cleats, *c*, that support the slats, should be fastened with nails or screws, three inches from the top, the better to keep the mattresses and bed-coverings in place. The corners of the extension should project an inch or so at *o*, to rest upon the floor when in use as a bed. The mattresses should be a trifle longer and wider than the inside of the lounge seat, with the side pieces five to six inches wide, sewed in with a cord. An opening should also be left in the middle of the top of each, through which to stir up the husks or straw with which they are stuffed. The back and arms may be covered and stuffed to suit the fancy, with a cover of the same kind fitted to one of the mattresses, to be used as a cushion to the lounge during the day. The draping of the front and ends should be in separate pieces, to allow a part of the front, *d*, to be let down when the extension is used. We find this the most comfortable lounge we ever saw, and about as good as any spring-bed.

Dry Earth and Earth Closets.

Probably no invention, or rather application, of so much importance was ever so neglected as that of the use of dry earth in the management of what, for the want of a better name, we call "night soil." The application of earth to this purpose is as old as the days of Moses; the invention consists in the apparatus for applying it, and for this, and for his efforts to popularize its use, the Rev. M. Moule, of England, is one of the world's benefactors. If the deposits which nature requires all to make, were simply unpleasant, and on this account were to be put out of the way as soon as possible, the use of dry earth would be an important one; but when it has been proven, as clearly as can be, that these deposits can cause and communicate disease, and that sickness and death may be traced directly to them in a neglected state, the matter becomes one of vital importance, and one which cannot be too often, or too earnestly, presented to the heads of every household. Col. Waring, who has given much attention to sanitary matters, has several times presented this matter in his articles, where they are more likely to meet the eye of the house-father than of the house-mother, and letters we receive asking for explanations, show that the subject is far from being generally understood by housekeepers. Let one travel among the rural population in any part of the country, and it will oftener than otherwise be found that the one neglected place on the premises is the privy; houses where the interior and mode of living of their occupants indicate comfortable means, refinement, and luxury, will often have for this most important out-

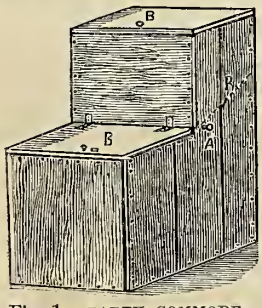


Fig. 1.—EARTH COMMODE.

building an affair which is repulsive to every sense, and a standing menace to those who must visit or pass near it. The necessity for a reform in this matter is too glaring to require argument; to neglect that which concerns both comfort and health, would be wrong were the better way difficult and expensive, but where, as in this case, the reform is easy and inexpensive, the neglect is doubly wrong. The principle is simply to cover the deposit with dry earth, and is not patented or patentable; various contrivances for accomplishing this, some of them very ingenious and useful, are patented, and where one can afford them, are desirable. But the absence of these need not deter any one from using the dry earth; the requirements are: a receptacle, dry earth, and some means of placing the earth on the deposit; this may be done by an automatic machine or by a simple scoop or paddle. The essential thing is the dry earth or its equivalent; sand will not answer so well; road-

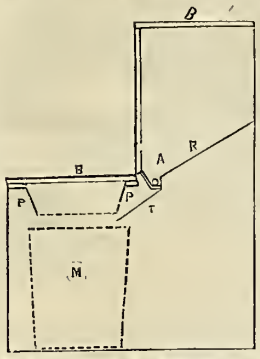


Fig. 2.—SECTION OF COMMODE.

Fig. 3.—EARTH DISTRIBUTER.

dust of a stiff, clayey, loamy kind, or similar earth scraped up from the surface of a field or garden, during a dry time, dried still further on some boards, sifted and stored under cover, is the best; the next best, and nearly as good, is fine coal-ashes, a material that every one who burns coal is desirous to be rid of. An ordinary outbuilding can be cleaned out, the vault filled up, and a box provided which has sled-runners, so that it may be hauled away when full; inside of the building should be a box of the earth or ashes, with a scoop or some kind of shovel; then if every member of the family *will use the earth* at each visit, the inexpensive arrangement will be as effective as the most elaborate; still those who can afford them will find the fixtures made for the purpose, in which the earth is thrown down by the weight of the person, much more sure and convenient. *Note.* The throwing of slops of all kinds into this or any other earth closet must be *absolutely prohibited.* Dry earth so completely absorbs all odors and emanations that a portable closet may be used in any convenient place in the house, and for invalids it is one of the greatest comforts imaginable. If one wishes to save expense, the matter may be greatly simplified. Provide a box to contain a receptacle, fitted with seat and a cover, also a smaller box, to hold the earth, tight, or lined with paper, to prevent sifting, with cover and scoop, these complete the affair. These may be made as ornamental as desired, or be provided with movable drapery. Several companies now make very excellent commodes in which there is a receptacle for the earth, which is let down by a pull as in an ordinary water-closet. We here give illustrations of a

Home-Made Commode,

BY L. D. SNOOK, YATES CO., N. Y.,

which is of very simple construction, as shown in the accompanying engravings, fig. 1 being a perspective, and fig. 2 a sectional view, the letters referring to the same points in both. *B, B,* are hinged lids or covers of wood, the lower one opening to the closet, the upper one to the dry earth receptacle, or box. Figure 3 is an earth distributer, which lays upon the bottom of the earth box; three or more holes, one inch in diameter, are made as shown, and correspond with a like number and size made in the bottom of the earth box. The distributer passes beyond the side of the closet, and is provided with a knob, as shown at *A*, fig. 1; moving this laterally, allows a small portion of earth to fall through the bottom upon the tin or zinc conductor *T*, and is conveyed into the receptacle *M*, which is removed through a door at the side, but not shown; *P, P,* is a shield of sheet zinc about six inches wide, and attached underneath the seat or around the edge. Owing to the liability of the earth to pack, a few nails, iron or wooden pins, *X, X,* fig. 3, are inserted as shown. It is best to insert a stiff coiled wire spring between the knob and outer side of the closet, and so arrange the distributor that the earth will only fall upon the conductor *T* when that is pressed inward, the spring forcing it outward as soon as the pressure is removed.

Some Recipes in German Cooking.

Having had inquiries from time to time as to the manner of preparing the dishes named below, we referred them to an experienced German housekeeper, who kindly gives the recipes:

SMOKED GEESE-BREASTS.—Cut out the breasts of young, fat, and well-cleaned geese, rub them well with salt, and with a little saltpeter, place in a jar or other vessel, with a weight upon them. Let them remain thus for ten days, after which put them in smoke for two weeks.

SOUR GOOSE.—To utilize the remainder of the goose after cutting out the breast for smoking, it is prepared as follows: cut up the flesh into suitable pieces; then take of vinegar and water equal quantities, enough to cover the meat, add a handful of small onions, and salt, pepper, cloves, etc.; boil together until the meat is done. This, if put in a cool place, will keep well, and makes an excellent dish when warmed up or eaten cold.

BOYS & GIRLS' COLUMNS.

Playing School.

Isn't it fun to play school? The only trouble about it is that each one wants to be the teacher—but it wouldn't be much of a school if all were teachers, and no scholars. So the best way is to take turns, and then you can see who are the best teachers, and—what is quite as important—who are the best scholars. On rainy days, when you can not go out, keeping school is a capital play for

CHILDREN PLAYING AT KEEPING SCHOOL.

in-doors, and lively youngsters can get a great deal of fun out of it. Only recollect when it comes your turn to be teacher, you must not be too severe. The best teachers among the real teachers are not those who scold the most, and make-believe teachers will find that they can get along with their scholars much better by being kind than by being cross. When you are the teacher, you may be troubled by scholars who will not keep order—who will whisper, or scuffle their feet on the floor as they come in and go out, or who in the school will not sit quietly in their seats, but "fidget" around. Before you

get out of patience with your scholars, just stop and think how it is with real scholars, and ask yourself if you havn't done in the real school these things which now vex you, and then may-be you will wonder how the real teacher was so kind and mild with all these things to vex her, and perhaps when you next go to school you will recollect how annoying these things must be, and try not to do them. There are some plays that children in all parts of the world seem to like, and in almost every country children have dolls of some kind, make sand or mud-pies, and play at keeping school. This pretty little picture shows that the play-school is much like the real school; there are the quiet scholars, who come to school to study; there is that girl who never can keep still, her hand is up, showing that she wants something—that uneasy girl is in every school. Then there is the boy wearing the long ears for punishment, and no doubt deserves it; and that other girl, who is always whispering on the sly—and always gets caught at it; but the learned teacher is just now too busy to see her.

Snaring Rabbits, or Hares.

One of our Canada boys writes, that rabbits are plentiful and troublesome, and he would like to know how to catch them with wire snares. We might answer that there was no way by which this could be done in Canada—or the United States either—for the simple reason that there are no rabbits in either country. The fact is, that all the wild animals we call rabbits are really *hares*: one of the differences between the two is that rabbits burrow, while the hares do not, and though our hares may hide in any hole they may happen to find, they do not dig burrows like the European rabbit. As our animals are generally called rabbits, it is not likely that people will soon learn to call them hares, but it is well that boys should know the difference. There are good reasons why rabbits—as we will for the present call them, because every one will then know what we mean—should be caught. In the first place, they do a great deal of damage to trees, especially young trees, and various kinds of shrubs; if not prevented, they will sometimes ruin a young orchard by eating off the bark of the trees. Last winter we found some dwarf pear trees with their lower branches very neatly trimmed; we could not recollect that we had told any one to trim them, and upon inquiring, found that "nobody did it"; it was a rather puzzling case, but when the snow had quite melted away, the rabbit droppings told the story; the rabbits, hard pressed for food, had cut off the ends of the young twigs very neatly, and either eaten them up or carried them off, for not a trace of the prunings was left. The damage they do is a sufficient reason for trapping or otherwise stopping them, but there is another good reason: young rabbits are very good eating, and in parts of the country where fresh meat can only be had now and then, a rabbit pie or stew makes a very nice dinner. So, while we do not approve of allowing boys to catch or kill everything that runs or flies, we think that rabbits are fair game. Probably every country boy knows how to make the box-trap, the top and one end of which lifts, and is held by a string fastened to a peg, which is baited with a bit of apple, or other bait; these traps are pretty certain, and are in most general use. Catching the animals with wire, as our young Canadian wishes to do, can only be done where the rabbits have a regular run. They have a way of going in the same paths, especially in the snow, and they will always follow an old track rather than make a new one. If they are in the habit of visiting a garden, or an orchard, it will be found that they usually come in at the same place, which may be found, and the wire snare set there, or their tracks may be followed, and a place found in a brushy pasture where they have made a run. To use the wire snare, the run must be found and the snare must be placed where they will naturally go through it. The wire used is fine brass or copper; a piece about 18 inches long has a loop made in one end, by twisting, and through this loop the other end of the wire is passed—just as you would make a slip-noose in a string. To set this, the hole in the fence, or the run-way in the brush, must be made so narrow that the rabbit can only get along by passing through the noose; the hole in the fence may be closed by boards, or the brush-run be narrowed by setting in pieces of cut brush, as shown in figures 1 and 2, so that the rabbit can easily pass its head through, but will be caught when its shoulders touch the wire. Of course the loose end of the wire must be made fast by twisting it around a piece of brush, or in some other manner that will hold it. We have given the Canadian friend the best information we have on this manner of trapping, but we never used this kind of snare; this description was sent by an esteemed correspondent a long while ago, who at the same time gave us another way of trapping rabbits; he says that rabbits are very fond of salt, and may be caught by means of a salted string in the box-trap, shown in figure 3. A string is dipped in salt and water and dried; the doors are held open by means of this string, fastened to a peg in the floor of the trap; another salted string is carried from the peg and stretched across the run. The rabbits, finding this salted string, will eat away at it, until they come to the trap, and when they cut that part fastened to the peg, the door will fall, and a hinged leg, bent under the handle in the engraving, will fall into place and prevent the door from being opened. We hope that our friend at the north will not only save the trees, but have many a good dinner.

Fig. 1.—SNARE IN FENCE.

Fig. 2.—SNARE IN BRUSH.

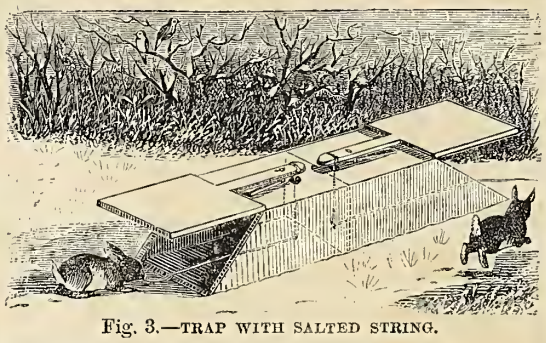


Fig. 3.—TRAP WITH SALTED STRING.

The Doctor's Talks—About Various Matters.

Last month I intended to say, but somehow forgot it, a word to our new Boys and Girls. By "new," I of course mean those who read the paper for the first time. Every year a great many fathers and big brothers take the *American Agriculturist* who never did so before, and of course this enlarges the circle of young folks. So don't be bashful, you new comers; the way to join our family is to come right in; we are not full, and never expect to be, so sit down at the table, (that's the paper), partake of just such food, (pictures and reading), as the rest have, and be one of us. Our family, while one, is rather extended, and "runneth the wide world round," as the poet wrote of the sea, but wherever they are, we try to show no partiality, and all are equal in our regard; still, if we do make any difference, we like the far off ones just a little the best, as we pity the poor youngsters for being away at the "ends of the earth," (don't let some smart youngster tell me that the world is round, and can have no ends!) and are so very long in getting the paper.

"ATTENTION THE UNIVERSE!"

said a celebrated man some years ago, in speaking to a mass-meeting so large that it seemed to him as if all the world had gathered there. So when we say,

ATTENTION YOUNGSTERS!

it is not very much unlike speaking to a good share of the "universe," as it is a call that causes bright eyes to be on the look out from up towards the Arctic region to the Gulf of Mexico; the call runs over to Central America, and down through South America; it takes a step over to New Zealand and Australia; it is heard in other Pacific Islands, and wakes up little ones in China and Japan; then somehow it is heard by quite a big lot of you in parts of Africa, and so the word runs up along the coast spreading into various countries on the continent of Europe, especially Germany and Hungary; is heard in the British Isles, and so finally makes a complete circuit around the whole globe. This is no fancy idea, for were you to go into our mailing rooms you would see the *American Agriculturist* sent to all these places, an astonishing number to some of them, and that the very things that any one of you reads are read by other children in all these far off lands, and each one of you has something in common with all the rest. What I want to say to all of you, new and old, and wherever you may be, that your letters to "The Doctor" are always welcome. If you know anything that pleases or interests you, you should let all the rest know it; or what is the next best thing if you

WANT TO KNOW ABOUT SOMETHING

you must write to "The Doctor," and if I can't tell you, I will find some one who can. In this way all the members of this big family can help one another....I have a pretty good budget of letters this month, but it is not so large as I am sure it will be, when the new comers learn that I expect to hear from them....A large share of the letters, this time, are about matters that need too long an answer to be given here, and I must try to take care of them in another way. Here is one from a

LITTLE VIRGINIA GARDENER,

and a girl too. That boy Wat. smiles at the idea of a girl having a garden, but if all the boys were like him, there would not be any gardening done, unless the girls did it. Miss Emma thinks a great deal of her Virginia home; her father has given her a quarter of an acre of land to cultivate for herself. She tells what she has raised in it, but she is like many older gardeners, greatly troubled with weeds. A grass that she calls "Wire grass," which is kept down in the fields by the plow, but in her garden, though she tried hard to kill it, it is too much for her. Thinking that "The Doctor" must know everything, she writes for me to help her out of her trouble. There are some things that I know, and some that I do not know. One of those I do not know is, what she means by "Wire grass," as it is a name given to different plants; one of them was pictured last month on page 20, but it cannot, I think, be that. If she can find a piece, with the flower-head or seed, and send it to me, I can then know what she is talking about. Emma is troubled by this grass, but there is a greater trouble that she does not mention—she has too much land. If she can get her father to take back two-thirds or three fourths of the land, she will then have all that a girl of eleven can take proper care of, and on a small piece (with proper care) she will get as much and not work so hard as on the larger one. Emma, let us all hear more about that garden ...Here is a "Farmer's Boy" in New York state who inquires about the

TWINING OF HOP-VINES.

He knows that with him hop-vines twine "with the sun," and he asks if the hops were planted south of the Equator "will climb in the same way around a pole; if they will, why? If not, why?"—I do not think that the geographical locality can make any difference, but when you ask me "why?" there comes the rub. When our "Farmer's Boy" gets older, he will find that there are a great many things the "why" of which cannot be explained. We can no more tell why a hop-vine climbs in one direction, and a bean vine climbs in another, than we can tell why they climb at all. We cannot see any good reason why the hop should not have a strong stem and stand without help, like the tree, which we use as a pole for it to climb upon. We know that all created things are made as they are, and endowed with certain faculties for a good purpose by One who looked upon his work "and saw that it was good," and though we can find out many things, and are continually learning more and more, yet in every case we come to a point where we must stop and say "God made it so."

CLIMBING PLANTS

of all kinds are most interesting things to study, and young persons who keep their eyes open can see many beautiful and curious things about them; they will find that all do not twine around the pole, like the hop, but that some climb by the help of their leaf-stalks, others by the aid of tendrils, those wire-like stems that you must have noticed in the grape-vine, the cucumber, and many other plants; and some climb by tiny roots that come out all along their stems and cling to the bark of trees or the rough surface of a wall. There are so many wonderful things about these plants that I will try and tell you about them when the growing season comes, and you can see them yourselves.....I get a great many letters from our youngsters, that would not interest the whole family, and such I answer by mail, and say nothing about them, but here is one from two of my boys away off in Honduras, who ask about

VISITING THE CENTENNIAL EXHIBITION.

If it were merely a question if it would pay them to come, could they do so as well as not, I could say *yes* at once, but the case is not so simple as that. They ask how they can put a certain sum of money to the best use, whether by coming to the Centennial, or by staying at home, and using it in improving their education there. It is a very difficult matter to give advice in this case, for it has two important sides. I'll think on it.

A Doll Show!

Only think of a Doll Show! That is what the English children have had to amuse them lately. It was held at Alexandra Palace, in London, which is a great show place, something like the Crystal Palace. There were all

kinds of dolls, those which could walk, and those which could "squawk,"—though it is called talking—and those which could move their eyes, and do everything that dolls could be made to do by machinery and clock-work. Then, besides, these shop dolls, made to sell, there were home-made dolls, and doll's-dresses made by children, and ever so many prizes for the best dressed dolls. There were many old folks, and as you may suppose, a great crowd of young folks to see the show. Every one of the *American Agriculturist's* little girls no doubt wishes she could have seen all this too. We wish we could have seen it, but we wish more that we could have seen the children who saw it. What a lot of wide open eyes and pleased faces there must have been, and better worth seeing than all the dolls. There was one thing very wonderful about this show. There were princesses and duchesses, and others with titles there, but that is not wonderful, for they are only women. The wonderful thing is the way in which we came to know that such a show had taken place. We had known that it was to be held, but away under the sea, far down in the deep ocean, where the wire cable stretches for thousands of miles, there came from London to New York on New Year's day the message

"The Doll Show at Alexandra Palace is a great success."

That is what we call wonderful, and we don't think that any dolls ever before had a message sent about them by ocean cable. If those dolls could feel, wouldn't they be proud to know that this message was sent and printed in the New York papers! But there is something better than all this about the show. The dolls and dolls' clothes made and sent by the children for the prizes, are afterwards to be distributed among the sick children at the childrens' hospitals. Wonderful dolls these, that could make the children happy in making and dressing them, could make the crowd of children happy who went to see them—and then the greatest of all, could carry happiness to hundreds of sick, weak, and suffering children! Who says that there is no good in dolls!

Aunt Sue's Chats.

Directions for "Spatter-Work."

Provide yourself with an old tooth-brush, a fine tooth-comb, and some India-ink, which must be carefully rubbed up with a little water on a saucer; though purple

Fig. 1.—A SPATTER-WORK TIDY.

ink, or almost any coloring matter will answer your purpose. (If, however, you use purple ink, you had better have some alcohol at hand to take off *misplaced* "spatters" on hands or clothing.) Spread an old newspaper on the table, place your blank card, paper, or muslin, upon it. Now arrange the ferns and leaves in a graceful position, and stick fine pins or needles through them on to the card, to keep them in position. Use plenty of pins, if they are so fine that they won't deface the card. Dip the brush into some water, and shake it well, slapping it on to a paper or rag, as it must not be too wet. Pour into a butter-plate, or saucer, a little purple ink, or whatever coloring matter with which you have provided

Fig. 2.—A VISITING-CARD IN SPATTER-WORK.

yourself, and take some of it up upon your brush. Take the brush in your right hand, and the comb in your left; hold the brush steadily over the card, about two inches off—and draw the comb, across the bristles, *towards* you. You had better try it upon some waste paper before splashing your card, as it requires a little practice and experience to spatter just right. Should the brush be too wet, the spots would be too large and so spoil the effect. You will soon, with a little care, acquire dexterity, and can easily make pretty ornamental articles—Swiss muslin tidies (fig. 1), lamp-shades, card-racks, fans, catch-alls, and even pillow-shams and window-shades, with elegant designs in "spatter-work." A very graceful, pretty visiting-card (fig. 2) may be made, by pinning a small piece of blank paper (large enough upon which to write your name) upon the card, either at one side, or in the center, and arranging the ferns tastefully about it, then spattering it. Names, mottoes, and initials, may be added by having ornamental (or plain) letters cut out in paper, and pinning them on in their places.

Thanks for puzzles, answers, letters, etc., to Norman E. Clark, Walter D. T., Effie, Mrs. G., Mark A., Franklin, O. O., Alice, Sallie F. Y., Geo. W. B., Isola, and Frank H. N.

S. S. S.—I presume that the "swarm of bees," to which you refer, is the following:

"B patient, B prayerful, B humble, B mild,
B wise as a Solon, B meek as a child,
B studious, B thoughtful, B loving, B kind,
B sure you make matter subservient to mind.
B cautious, B prudent, B trustful, B true;
B courteous to all men, B friendly with few.
B temperate in argument, pleasure and wine;
B careful of conduct, of money, of time.
B cheerful, B grateful, B hopeful, B firm;
B peaceful, B-nevolent, willing to learn;
B punctual, B gentle, B liberal, B just,
B aspiring, B humble, *because* thou are dust;
B penitent, circumspect, sound in the faith,
B active, devoted, B faithful till death;
B honest, B holy, transparent, and pure,
B dependent, B Christ-like, and you'll B secure."

G. F. W.—A "palindrome" is a line that reads alike backward and forward. Adam's first observation to Eve (?) was one—"Madam, I'm Adam"; and Napoleon's answer, when asked if he could have sacked London, is another—"Able was I ere I saw Elba."

SALLIE says some one has given her an anagram, "New door," to make one word of, and she can't do it. Bless your little heart, it is *a catch!* Take the letters forming "NEW DOOR," and see if you cannot transpose them into "ONE WORD." The "window that a star is like"—is *a skylight.*

Aunt Sue's Puzzle-Box.

ANAGRAMS.

1. Pa eat prim ox.
2. Farm's onion tarts.
3. Can vail story.
4. Rep's rag-shop.
5. Beggar in red.
6. Expire my all.
7. At Rose so shy.
8. A muited clam.
9. No rat inlet.
10. O! I start gloss.

SQUARE WORDS.

Square the words "WHEN" and "WHOM."

GILES FARMIN.

TRANSPOSITION.

(Fill the blanks in the following puzzle with a word and its transpositions.)

An —— woman with —— intent,
Put on her —— and out she went:
"——" she said "Oh! give, I pray,
Some bread that I may —— this day." G. C. W.

CROSS WORD.

My first is in chapter but not in verse,
My next is in children but not in nurse,
My third is in eagle but not in parrot,
My fourth is in gin but not in claret,
My fifth is in lion but not in lamb,
My sixth is in veal but not in ham,
My seventh is in trade but not in a buy,
My eight is in June but not in July,
My ninth is in night but not in day,
My tenth is in mire but not in clay,
My eleventh is in cousin but not in niece,
My twelfth is in whole but not in piece,
My thirteenth is is kindness but not in scold,
And my whole, if obeyed, is more precious than gold. AMBROSE M. S.

PI.

Het cheatusom dan oegate wree stirf rown ni Sinpa, ot stinghisdui hiscirtsan form rooms, hist begin sa nylear het from fo het scors sa het debar anc eb tuc.

NUMERICAL ENIGMA.

I am composed of 12 letters:
My 1, 9, 12, is a bird.
My 11, 7, 4, is a place of refuge.
My 5, 2, 3, 8, is a conveyance.
My 1, 6, 10, is what every person has.
My whole is the name of a popular story.

HUMPTY DUMPTY.

HOMONYMOUS WORDS.—(*Having similar sound.*)

1. Of man or woman's dress a part:
   Or passion strong will quickly start.
2. With this no lack of number fear:
   Or something pleasant to the ear.
3. Part of a church I here disclose;
   No faith in this man's word repose.
4. A ring of wood or metal made:
   Or sound preceding bloody raid.
5. Withered, without one trace of green:
   Or one who many things has seen.
6. A garment made of spotless white;
   While this remains we're in good plight.

HENRY.

CHARACTERISTIC INITIALS.

1. Finest Of Crayon Delineators. 2. Come Listen Kate. 3. Joined Battle. 4. Forcible Declaimer. 5. Devoted Backwoodsman. A. SAVINNE.

CONCEALED PROVERB.

Oliver, give me your hand, your little toes are so lively, I am afraid you will fall.

BISECTED AMERICAN CITIES.

1. Just made, and a boat. 2. An adjective and a measure. 3. An animal and a place for crossing rivers. 4. A harbor, and the farmer's bank. 5. A measure of time, and a measure of weight. 6. A peculiar wheel, and a home of wild beasts. 7. An instrument for fastening, and a harbor. 8. A worker in metals, and a piece of land. ISOLA.

ALPHABETICAL ARITHMETIC.

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EDD) W C K B D K D (COW
     W W C I
     -------
       I W E D
       W D Y O
       -------
         K E O K
         K E I O
         -------
             E D D
             E D D
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```

W. S. N.

DIAMOND PUZZLE.

1. Part of a map. 2. A cape of North America. 3. A county of Kentucky. 4. A city of England. 5. A town of Ecuador. 6. A sea of Asia. 7. A New England state. 8. A town of France. 9. A town of North America. 10. A country of Africa. 11. A country of Southern Africa. 12. The goddess of mischief. 13. Part of a house.

The central letters, perpendicular and horizontal, form a New England state. R. D. GAGE.

DOUBLE ACROSTIC.

1. Proud. 2. An oriental country. 3. An article of wearing apparel. 4. A city in Canada. 5. A greasy substance. 6. Anger. 7. A part of the United States. 8. Once more.—The initials give the name of a Queen, the finals the name of an Emperor. ALBERT & AUGUSTA.

ANSWERS TO PUZZLES IN THE DECEMBER NUMBER.

ANAGRAMS OF SHAKESPEARE'S CHARACTERS.—1. Touchstone. 2. Poor Yorick. 3. Caliban. 4. Miranda. 5. Cleopatra. 6. Cardinal Woolsey. 7. The Ghost. 8. Lady Macbeth. 9. King Lear. 10. Dogberry.

NUMERICAL ENIGMAS.—1. Trailing Arbutus. 2. Constantinople.

DOUBLE ACROSTIC.—C— al —F
L— eve —L
A— lapac —A
R— cadiu —G
I— gnobl —E
O— tseg —O
N—athanie—L
E— rmin —E
T— enan —T

DECAPITATIONS.—1. Madam, Adam. 2. Part, art. 3. Please, lease. 4. Alone, lone.

CONCEALED BIRDS.—1. Macaw. 2. Auk. 3. Emu. 4. Dove. 5. Lory. 6. Lark. 7. Kite. 8. Wren.

SQUARE WORD.—E R R O R
R O O M Y
R O B E D
O M E G A
R Y D A L

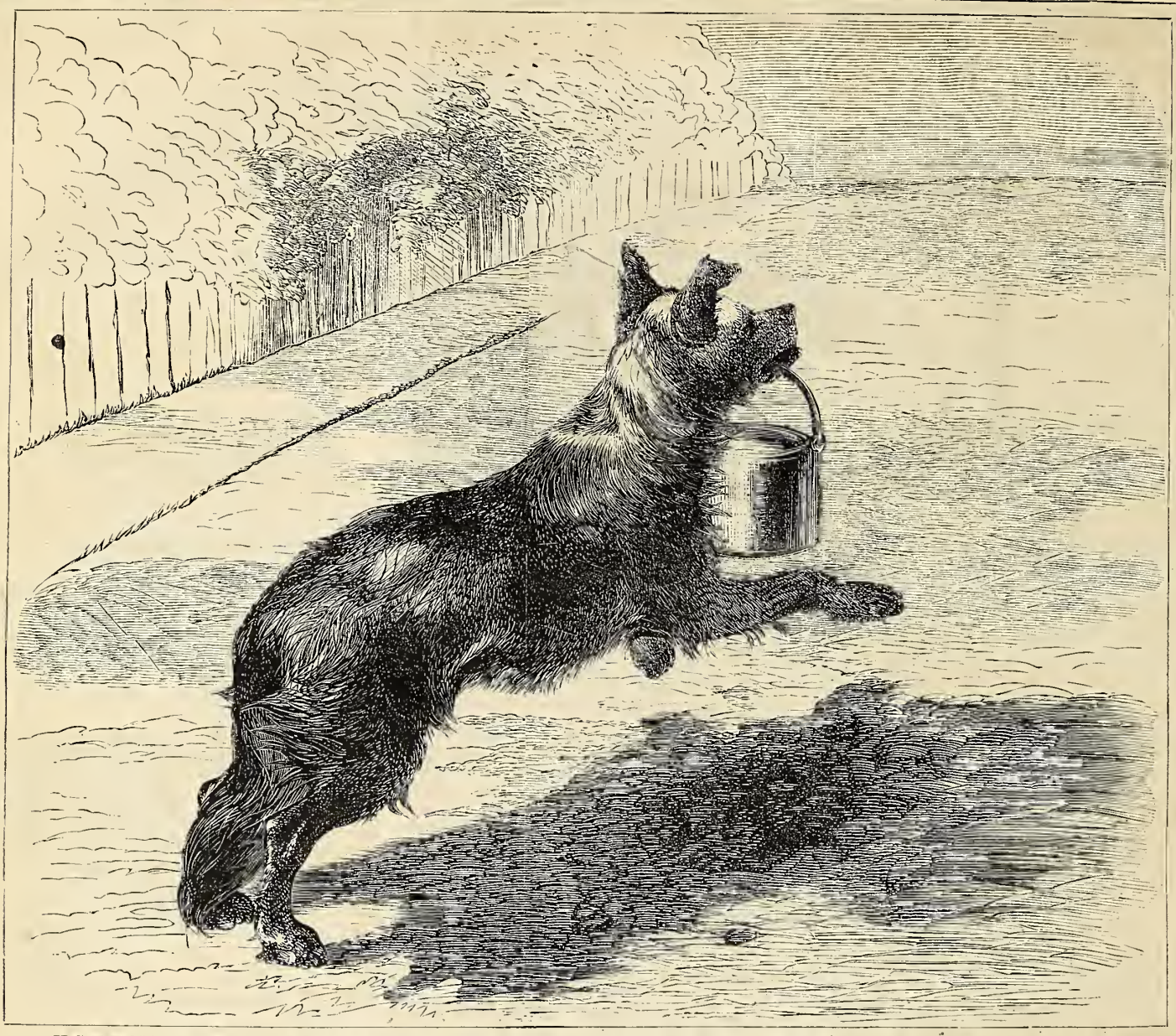
CHARADE.—Incognito (inn—cog—nigh—toe).

PUZZLE.—Sea of Azof (from Nyauza and Fondulac).

TRANSPOSITIONS.—1. Bleat, table. 2. Stage, gates. 3. Lemons, melons. 4. Snake, sneak. 5. Warden, Andrew, Wander. 6. Auction, caution.

POSITIVES AND COMPARATIVES.—1. Seize, Cæsar. 2. Past, pastor. 3. Wand, wander. 4. Badge, badger. 5. Sea, seer. 6. Eye, ire. 7. Gross, grocer.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.,* and *not* to 245 Broadway.



USEFUL AND USELESS DOGS.—A PRIZE FOR THE BOYS AND GIRLS.

If you young people ever look into the older people's part of the paper—as, I think, some of you do—you will sometimes find that dogs are spoken of as being very troublesome, and that we not long ago even published a trap for catching them, and you will no doubt wonder why I often speak well of dogs in the Boys' and Girls' Columns, and they are given a bad name in the other columns. The fact is, there are different kinds of dogs, just as there are different kinds of people. Some men are so bad and unlovely, that it is sometimes better for them to be shut up, to prevent them from doing harm to others, and it is no more fair to judge all men from the bad acts of these few, than it is to consider all dogs are useless because some are so. Probably many of you, especially those who live in the country, think it would be very lonesome were it not for the family dog, who is always ready to go with you, and always on the lookout to see that nothing goes wrong. It is true that there are some dogs which are good for nothing, but you are sure that *your* dog doesn't belong to that class. These bad dogs usually have no particular home, or if they have one, it is among people who keep him half starved, and do not care whether he stays at home, or is running about and doing mischief. When dogs are talked about in your part of the paper, good dogs are meant, those family dogs that stay at home, and mind their business. If people will keep dogs of another kind, which roam about the country, killing sheep and lambs, and doing other mischief, they must pay for the damage that these curs—I will not call them dogs—may do. Because some dogs are bad, it will not do to say that no dog is of any use. An intelligent dog is often of much use. One of my neighbors had a dog, which seemed to know so much that I thought it a great pity he could not speak. He could do almost everything but speak. One evening the dog came to the house, and scratched at the door; the door was opened, but Tip—that was his name, but he was sometimes called Tipper or Tippecanoe "for short"—instead of coming into the house, ran off: the door was closed, but soon after there was a scratching again, and when the door was opened, Tip pulled at his master's clothing, and looked out, as if he would say, "come along." The dog was so much in earnest, that his master followed him, as Tip went bounding toward the stable, leading the way. When he reached the stable, Mr. F. found that in some way one of his horses had got into trouble, and had fallen with his head through some bars in the stall, in such a manner that he would likely have died before morning, had not Tip seen that something was wrong, and called for help....Here is a picture of a dog, which is given in part for the reason that it is one of Mr. Harrison Wier's best, and in part for another reason. Mr. Wier is famous for drawing animals, and the best pictures in the English journals for boys and girls are by him. There are many artists who can draw dogs and other animals, but there are few who can put so much life into them. Look at this dog, as he hurries back on his errand! Every one can see that, as the boys say, he is "full of go"! You know that he is on business, and he is giving his whole attention to it; I have seen boys do errands, and not be half so lively about it. Some dogs are quite useful in this way, and can be very easily taught to fetch and carry in a most wonderful manner. Many years ago, when I lived in the city, a neighbor had a dog which went every morning to the news-stand, two or three blocks off, got his master's paper, and took it home, as carefully as either of you could; sometimes other dogs would come up to him, but he was on business, and would only notice them by a growl, as if to say, "just wait until I get this paper home, and I will attend to you."....Now for the other reason for giving this picture. It is a long time since we have had any prizes. The last time I offered a prize there was too much of it; and it took more time than I could spare; now let us see if we can not have a good time over a very simple prize-question. You see that the dog in the picture is on an errand; I have told you about another dog that went on an errand for a newspaper; no doubt many of you own, or know of dogs, who do, or have done, similar things. Now then, I wish some stories of these dogs, which have been useful in this way, that have been taught to go on errands for their master. They must be true stories, such as you know to be true yourselves, or that your parents know to be true—only in this case the stories must be told by yourself in your own way. Some of the best stories it is very likely will be printed. Now to make it interesting, I propose some little prizes. A book for the best story by a boy and a girl between 12 and 16 years old; and one for the best by a boy and a girl 12 years old and under; that will make four books, two for the boys, and two for the girls; the books, of course, to be good and new ones, and suitable for young people of those ages. *Mind the conditions*, which are: the stories are to be written by yourselves, and true, as above stated; they must not be longer than two pages of letter paper, and would be better, if shorter; they must be written with black ink—my old eyes can not bother with fancy-colored inks, or lead-pencil; they must reach me by March 15th next, and must be directed to "The Doctor," 245 Broadway, New York City. I was about to add another condition, but I will put it in the form of a hint. When you write for a prize in this way, do not set your mind upon getting it, and feel unhappy, and think something has gone wrong, because you failed. Recollect there are hundreds of others who are trying, and only a few can be the winners. In giving prizes in former years, I have selected those, the very trial for which would be useful, and though this is not so instructive as some former ones, the writing out of a story as well as you can, will be a good exercise, and worth doing for itself. The awards in this, as well as in former cases, will be left to persons, who will only judge the stories on their merits. Now I think that, unless boys or girls can write without feeling unpleasantly because they did not get the prize, they had better not try, for in our large family of little folks we want every one to be happy and contented.

THE DOCTOR.

"Standard Pure" RUBBER BOOTS.

MADE BY THE

"Candee Rubber Co."

TESTIMONIALS.

NEW YORK, *Dec. 22d*, 1875.

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DEAR SIR—*In answer to your inquiry, I will say, that a pair of your "Standard Pure Gum Rubber Boots," which I gave to my gardener, a year ago, wore very well, proving strong, pliable, and durable. After a good deal of use, they are still doing good service.*

Respectfully, *ORANGE JUDD.*

(These boots were put in use Dec., 1874, and consequently have given one year's wear.)

NEW YORK, *Dec. 24th*, 1875.

L. CANDEE RUBBER COMPANY.

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Yours, truly, *C. C. NORTH.*

Any size Expressed C. O. D. Send for price-list. Correspondence Solicited.

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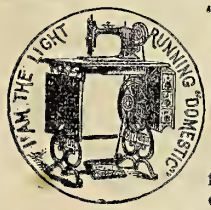

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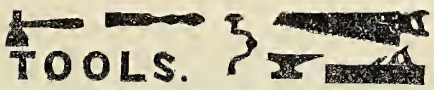

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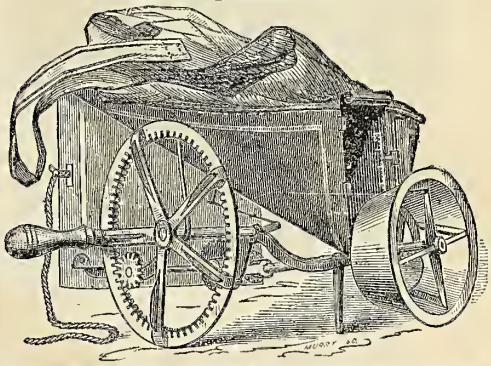

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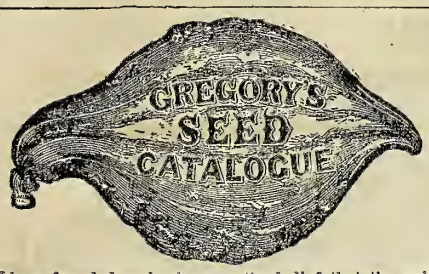

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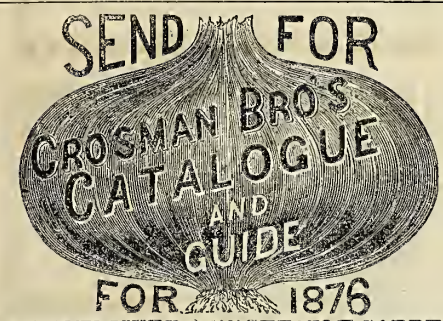

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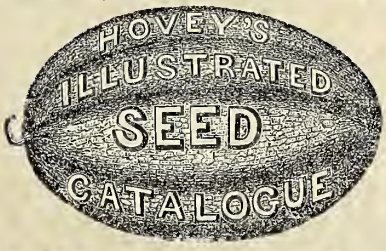

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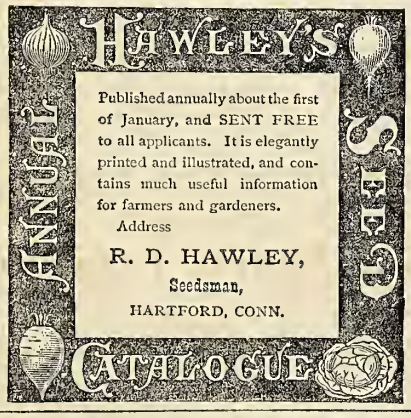

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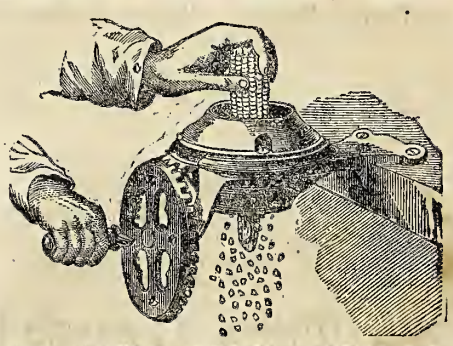

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7	*Child's Self-operating Swing (do. do.)*	$ 4 00	9	32
8	*Doll's Cottage Chamber Set (do. do.)*	$ 5 00	12	37
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19	*Ice Pitcher..... (do. do. do.)*	$16 00	24	80
20	*Casters.....(do. do. do.)*	$ 9 00	17	54
21	*Cake Basket ..... (do. do. do.)*	$12 00	19	65
22	*Revolving Butter Cooler(do. do.)*	$ 8 00	16	52
23	*One Dozen Teaspoons (do. do.)*	$ 6 00	15	45
24	*One Dozen Tablespoons(do. do.)*	$12 00	19	65
25	*One Dozen Table Forks(do. do.)*	$12 00	19	65
26	*Child's Cup (do. do.)*	$ 2 75	7	27
27	*Child's Knife, Fork & Spoon (do.)*	$ 5 00	12	37
28	*Moore's Floral Set (Moore Man'f'g Co)*	$ 1 00	3	....
29	*Excelsior Pocket Microscope (Vulcanite Optical Instrument Co.)*	$ 2 75	7	27
30	*Abbott Pocket Microscope (L.G.Abbott)*	$ 1 50	4	....
31	*Four "Pocket Soap-Bubble Toy" (Bliss)*	$ 1 00	3	....
32	*Turn-table Apple Parer (D.H.Goodell)*	$ 1 00	3	....
33	*Climax Apple Corer & Slicer (do.)*	$ 1 00	3	....
34	*Family Cherry Stoner (do.)*	$ 1 00	3	....
35	*Knives and Forks (Patterson Bros.)*	$14 25	21	70
36	*Knives and Forks (do. do.)*	$18 00	27	92
37	*Carver and Fork (do. do.)*	$ 4 00	10	34
38	*French Cook's Knife, Fork, and Steel*	$ 4 00	10	34
39	*Pocket Knife (Meriden Cutlery Co.)*	$ 1 50	4	....
40	*Pocket Knife (do. do.)*	$ 2 00	6	22
41	*Pocket Knife (do. do.)*	$ 2 75	7	27
42	*Ladies' Pocket Knife (do. do.)*	$ 2 00	6	22
43	*Multum in Parvo Knife (do. do.)*	$ 3 50	8	30
44	*Garden Seeds & Flower Bulbs(select'n)*	$ 2 00	6	22
45	*Sewing Machine (Remington)*	$70 00	80	268
46	*Beckwith Portable Family Sew'g Mach*	$20 00	30	100
47	*Lamb's Family Knitting Machine*	$55 00	68	230
48	*Washing Machine (Doty's)*	$14 00	21	70
49	*Clothes Wringer (Best—Universal)*	$ 8 00	16	52
50	*"Always Handy" Stove Shelves (American M'f'g Co.)*	$ 3 00	8	30
51	*Pat. Magic Bellhead Pencil (Ludden & Taylor)*	$ 1 50	4	....
52	*Ladies' Magic Charm Pencil (do. do.)*	$ 2 00	5	20
53	*Gents' Magic Charm Pencil (do. do.)*	$ 3 00	8	30
54	*Gold Pen, Telescopic Case (do. do.)*	$ 2 50	7	27
55	*Gold Pen and Pencil, Telescopic Case, Elegant (do. do.)*	$ 5 50	13	37
56	*Melodeon, 4-oct'e (G. A. Prince & Co.'s)*	$90 00	105	320
57	*Piano, Splendid 7-oct. (Steinway & So's)*	$650 00	625	1630
58	*Silver Watch (American Watch Co.)*	$40 00	50	165
59	*Breech-loading Pocket Rifle*	$16 00	24	80
60	*Creedmoor Long Range Rifle (E. Remington & Sons)*	$100 00	110	330
61	*Target Rifle (E. Remington & Sons)*	$56 00	68	230
62	*Sporting & Hunting Rifle (do. do.)*	$32 00	48	156
63	*Double Barreled Breech-loading Gun (E. Remington & Sons)*	$50 00	66	225
64	*Charles Pratt's Astral Oil (1 can, 5 gal.)*	$ 2 85	7	27
65	*Planet Jr. Combined Drill & Hoe (S. L. Allen & Co.)*	$15 00	22	75
66	*Cahoon's Broadcast Seed-sower*	$10 00	18	58
67	*Family Scales (Fairbanks & Co.)*	$14 00	21	70
68	*Worcester's Great Illust'ed Dictionary*	$10 00	18	58
69	*Any back Volume Agriculturist* (Unbound, Post-paid)	$ 1 75	.....	20
70	*Any Two Back Volumes do.* (Unbound, Post-paid)	$ 3 50	.....	29
71	*Any Three do. do. do.* (Unbound, Post-paid)	$ 5 25	13	37
72	*Any Four do. do. do.* (Unbound, Post-paid)	$ 7 00	15	47
73	*Any Five do. do. do.* (Unbound, Post-paid)	$ 8 75	17	54
74	*Any Six do. do. do.* (Unbound, Post-paid)	$10 50	19	61
75	*Any Seven do. do. do.* (Unbound, Post-paid)	$12 25	21	68
76	*Any Eight do. do. do.* (Unbound, Post-paid)	$14 00	23	74
	—(*Each add'l Vol. at same rate.*)			
77	*Nineteen Vols. XVI to XXXIV.* (Unbound, Post-paid)	$33 25	44	153
78	*Any Back Vol. Agriculturist* (Bound, Post-p'd.)	$ 2 50	.....	24
79	*Any Two Back Volumes do.* (Bound, Post-p'd.)	$ 5 00	.....	36
80	*Any Three do. do. do.* (Bound, Post-p'd.)	$ 7 50	16	48
81	*Any Four do. do. do.* (Bound, Post-p'd.)	$10 00	18	60
82	*Any Five do. do. do.* (Bound, Post-p'd.)	$12 50	21	71
83	*Any Six do. do. do.* (Bound, Post-p'd.)	$15 00	24	82
84	*Any Seven do. do. do.* (Bound, Post-p'd.)	$17 50	27	92
85	*Any Eight do. do. do.* (Bound, Post-p'd.)	$20 00	30	102
	—(*Each ad'l volume at same rate*)			
86	*Nineteen Vols. XVI to XXXIV.* (Bound, Post-p'd.)	$47 50	65	215
87	*A* **$10** *Library (Your Choice.)* (All sent paid through, by Mail or Express.)	$10 00	18	58
88	*A* **$15** *Library do.* (All sent paid through, by Mail or Express.)	$15 00	24	85
89	*A* **$20** *Library do.* (All sent paid through, by Mail or Express.)	$20 00	31	106
90	*A* **$25** *Library do.* (All sent paid through, by Mail or Express.)	$25 00	38	125
91	*A* **$30** *Library do.* (All sent paid through, by Mail or Express.)	$30 00	44	144
92	*A* **$35** *Library do.* (All sent paid through, by Mail or Express.)	$35 00	50	162
93	*A* **$40** *Library do.* (All sent paid through, by Mail or Express.)	$40 00	56	177
94	*A* **$45** *Library do.* (All sent paid through, by Mail or Express.)	$45 00	62	192
95	*A* **$50** *Library do.* (All sent paid through, by Mail or Express.)	$50 00	68	207
96	*A* **$60** *Library do.* (All sent paid through, by Mail or Express.)	$60 00	80	237
97	*A* **$75** *Library do.* (All sent paid through, by Mail or Express.)	$75 00	100	282
98	*A* **$100** *Library do.* (All sent paid through, by Mail or Express.)	100 00	125	360
99	*A Choice of Good Books. (See Description)*			

☞ *Every Premium article is* **new** *and of the very* **best** *manufacture. No charge is made for packing or boxing any article in our Premium List. The Premiums,* **Nos. 2, 9 to 11, 14 to 16, 29 to 31, 39 to 44, 51 to 55, 69 to 99,** *inclusive, will each be delivered* **FREE** *of all charges, by mail or express (at the Post-office or express office nearest the recipient) to any place in the United States or Territories.—The other articles cost the recipient only the freight after leaving the manufactory of each, by any conveyance desired. An* **Illustrated Descriptive List of Premiums** *named in the above Table will be sent* **Free** *to applicants.*

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 47.

"Ivory Wheat."—"F. E.," McConnell, Pa. We only know about this so-called "wheat" from the advertisement, from which we infer that it is not *wheat* at all, *i. e.*, the grain, *Triticum*, generally known as wheat. Its coming from Africa, the small size of the seeds, and other hints given in the advertisement, make us *guess* that it is one of the forms of *Sorghum*, cultivated in various eastern countries, and which in Africa furnishes a large share of the food of the natives. It has been introduced occasionally under various names, these past 50 years. It may have its uses—only it isn't *wheat*.

A Triple Hazel Nut is sent by E. H. Brown, Pike Co., Ind., in which three nuts are firmly joined or, as it were, fused together. Such departures from the usual form are always interesting, and they are sometimes very instructive.

Spiders.—The Boston Society of Natural History, publishes much valuable scientific matter in its regular "Proceedings," and it adds to its usefulness by printing in its "Occasional Papers" memoirs, which would not otherwise get into type. It has done a good work in producing the writings of the late Prof. N. M. Hentz, on North American Spiders. No branch of our natural history has been so little studied, as that which relates to spiders, and mainly for the want of books to aid the student, a want which this publication will do much to remove.

Hay Racks—Faulty Addresses.—"R. H. W." asks for a reply by mail to a question in regard to hay racks. He gives no address. This is only one of many such cases. We are willing to accommodate our friends to any reasonable extent, but it is not reasonable to expect a reply "by return mail," unless the full address—*post-office, county, and state*—is given. Several other correspondents, who may feel neglected because they receive no reply, will please accept this as the reason. We shall endeavor to give information about hay racks in season for the haying.

Failure in Growing Parsnips.—"J. J. L.," Crisfield, Md. Parsnips flourish best in a cool climate, and the heat of our climate will cause them to degenerate. There is no manure better for them than that from cow stables, and a dressing of salt is useful. The hardness of heart, with which those in question were affected, may be due to a check to the growth by a drouth, or you may need a change of seed.

Spaying Heifers.—"N. R. D.," Cheyenne, Wyoming Territory, informs us that he has succeeded in spaying 300 heifers without loss. His purpose is to raise them for beef. The profit of the operation is considerable, as the dressed weight of a Texan cow is 400 pounds, while that of a steer is 600, and the dressed weight of a spayed cow is expected to reach that of a steer. When the operation is properly performed, the risk in spaying a heifer is no more than that in castrating a bull calf.

Draining with Tiles.—"J. M. S.," Vermillion Co., Ill. Water should not enter tile ditches, except through the soil. If the head of the drain opens into a swale, the inlet should be protected by a wire netting or gauze cap, which will not admit any solid or floating matter. It would be safe to have also a filter of gravel to cover the inlet.

Cows for a Cheese Dairy.—"P. B.," Boonville, N. Y. The most profitable cow for a cheese dairy is a large-bodied animal that yields a large mess of milk, not very rich in cream, and that has the cream well mingled with the milk, and slow to rise. The Short-horn meets these requirements more nearly than any other cow, and this breed is coming into favor more and more with cheese dairymen. The Jersey is too small, and yields too little milk for cheese making, except for a very rich cream cheese. The well-known dairyman, Harris Lewis, of Herkimer Co., N. Y., is raising a herd of Short-horns specially for his dairy.

Improvement in Cotton Manufacture.—F. E. Whitfield, Senr., of Corinth, Miss., writes that his mill, in which the "Clement attachment" for cleaning cotton is in operation, has been started and

at work for the past few months with perfect satisfaction. This attachment takes the seed-cotton from the field, separates it from the seed, and cleans it from trash, and renders ginning unnecessary. Mr. Whitfield says that nearly three-fourths of all the buildings, motive power, machinery, and operatives, needed to convert seed-cotton into yarn by the ordinary process, are saved by this improvement. He invites all those interested in introducing cotton manufacture into the cotton fields, to examine his mill, and the new process in operation in it.

To Treat Broom Sedge and Sprout Land.—"W. B. D.," Benton, Tenn. If the soil in question is in pretty good heart, or can be manured, we would plow the sod not more than three inches deep in June, and let it lie two or three weeks, when it should be harrowed thoroughly. The harrowing should be repeated as soon as the weeds appear on the surface, until next September, when we would sow a bushel and a half of wheat per acre, spread what fine manure can be procured, and cover both seed and manure with a light furrow of not over three inches in depth. If possible, we would roll the ground, but do no more.

Grapes and Wine.—"W. H. R.," of Dorchester Co., Md., asks if grape-growing and wine making on a large scale, could be made profitable in northern New York and Vermont. This is a question that can not be readily answered, as localities in which grapes may be profitably grown, are very restricted. In the best grape districts in New York state, the difference between the two sides of a hill makes all the difference between success and failure. There may possibly be spots in both northern New York and in Vermont, where the conditions are all favorable, while half a mile away, grape culture is not possible. It is not possible to answer such general questions yes or no, but the places named are not the localities towards which we should, did we propose to, set a vineyard.

Lucern, (Alfalfa), in Virginia.—"J. D. S.," Bull's Valley, Va. What you call "alfalfa clover," is properly lucern, and not clover. Alfalfa is the South American name which was introduced with this plant into California from Chili. Lucern is a valuable forage plant, and will thrive well in Virginia, and over nearly the whole of the United States. It loves a deep, dry, rich limestone soil, and will yield good crops for several years, if occasionally manured. It is being largely cultivated in California for forage for horses, cattle, and sheep.

Among the Coal Mines.—J. Paynter, who is a coal miner in Trumbull Co., Ohio, says that when people wonder what he does with the *American Agriculturist*, he points to the largest crop of onions ever raised in his neighborhood: 37 bushels and one peck, on a bed 40 by 15 feet, and says "That is what I have done with the *American Agriculturist*." Or he shows 110 bushels of corn to the acre, as another proof of the use of the *American Agriculturist*. Our friend Paynter thinks if he could write, he would send us something frequently, and we would say to him, and to all others who think that they can not write well enough for publication, that the manner is of secondary importance. If you have facts or experiences, tell them in your own way, and we will manage to find them. We have not near so much difficulty with such letters as this of our correspondent, as we do with those of elegant penmen who make writing-school flourishes, and when Mr. P. writes of the *American Agriculturist*, "I hope I shall get it as long as I live, and that my children will take it after me," it is not only very plain and easily read, but very pleasant reading.

Chemical Fertilizers.—"J. D. S.," Va. For the convenience of those who so frequently enquire about artificial fertilizers, we now have regular price-lists in our market reports from month to month. These are the wholesale prices, which are always a little lower than those for small quantities. Quantities of 10 tons, can be obtained at the very lowest prices. Thus it will be an object for neighboring farmers who need fertilizers for their spring crops, to join in purchasing their supplies in one large lot.

How to Make Good Butter.—"F. B. S.," Baltimore, Md. To tell how to make good butter, is too long a story, and it has often been told in detail. There are a few golden rules that must be observed, which will meet every case, and will bear repeating. (1st.) Keep only those cows that yield butter of good color, flavor, and texture.—There are some cows from which *no one* can get good butter. (2nd.) Feed only good, sweet food, the best for butter being early cut timothy and clover hay, and corn-meal, and give only pure water. (3d.) Observe the most scrupulous cleanliness in the stable and dairy. (4th.) Keep the cows in good health and contented. (5th.) Use a churn that brings the butter in 30 minutes. (6th.) Keep the temperature of the milk and cream as near to 60 degrees as possible, and churn the cream when only slightly sour. (7th.) Work the butter-milk out of the butter with the ladle, and not with the hands; if water is used it should be pure and cold; the butter should be gashed or cut in working, not "plastered" or flattened out. (8th.) One ounce of pure dairy salt should be used for each pound of butter, at two workings, with an interval of twelve hours between the workings, (for immediate use many prefer less salt). (9th.) Pack at once in a sweet clean oak firkin or pail, and cover with a layer of salt until the next packing is laid down; when the firkin is filled, it should be beaded up air tight, and set away in a cool, dry, sweet cellar. The rest will be learned by experience.

The American Naturalist, which was published at a loss in Salem, is now issued by Houghton & Co., Boston. This journal might have been a success, had it been popular, and we are glad to see that the January number shows a decided improvement in this direction. Long technical articles, of interest to only a few specialists in science, should appear in the "Transactions" of the different Societies. What is needed is a journal for the unscientific, who have a fondness for, and would like to learn about natural objects. If the "Naturalist" supplies this want, it will succeed.

An Egg-bound Hen.—"J. H. M.," Mariners Harbor, S. I., has shown us a number of abortive eggs taken from the uterine passage of a hen in preparing it for the table. The eggs were masses of solidified yolk and membranes, without albumen or shells. This was clearly a case of "egg-bound," and must have finally destroyed the hen. It might probably have been discovered by noticing the condition of the hen, and examining the abdomen, when the hard masses would have been observed. The remedy would have been to inject some linseed oil into the passage, and by dilating it with the fingers, remove the collected matter. The trouble was doubtless from over-feeding with stimulating food.

Cement Roof.—"R. W. S.," Pike Co., Pa. A cement roof needs to be laid with a close boarding beneath it, and a depth of two inches of cement is sufficient. A coat of hot gas tar may be laid upon the cement, which will make it water-proof. The slope need not be more than an inch to the yard.

The Large Essex Pig.—"R. S. W.," Watsonville, Mich., who raised the Essex pig which dressed 570 lbs., and mentioned in the *American Agriculturist* recently, gives us the following particulars as to the age of the pig and the manner of feeding. The pig was 22 months old when slaughtered. He was placed in a pen for feeding on the 1st of June last, where he was fed milk and three ears of corn three times a day up to the 19th of Sept., when in addition he received a quart of dry shelled corn three times a day. When killed he was feeding well, and would have probably reached a considerably heavier weight. When cut up, the bones were found extremely hard, which explained how such small legs could support such a heavy weight of flesh.

Catalogues Received.

Our friends in the trade endeavor to have their catalogues ready on or shortly before Feb. 1st, and this prevents our giving the majority of them until our March number. As the list in that month is usually a heavy one, we give here those that have come to hand up to the day of going to press, January 15th. The names are given alphabetically.

SEEDSMEN.

Unless specially mentioned, the dealers keep vegetable, field, and flower seeds, gardening implements, and various horticultural appliances.

BEACH, SON, & Co., No. 7 Barclay St., New York, issue their catalogue in the "American Garden," now changed to a quarterly.

B. K. BLISS & SONS, No. 34 Barclay St., New York, accompany their catalogue with a Gardeners' Almanac, which contains a full calendar of operations.

D. M. FERRY & Co., Detroit, Mich. Through some accident this catalogue was overlooked last year until very late. We now notice it very early as one of the most complete and interesting of all.

J. A. FOOTE, Terre Haute, Ind., raises seeds, and has a specialty in his "100 Days Tomato."

JAMES J. H. GREGORY, Marblehead, Mass., sets forth his favorite cabbages and squashes; he has several novelties in vegetables, besides all the standard sorts.

HARVEY BROS., Buffalo, N. Y., send a very neat and well illustrated catalogue.

R. D. HAWLEY, Hartford, Conn., calls his catalogue the Centennial, and puts a fine Danvers onion on the title page. We wonder if friend H. intends any play upon words, and wishes us to see that he means "scent-ennial?" Mr. H. gives special attention to the genuine Wethersfield onion seed. Indeed he believes in Wethersfield, for one of the P. O. clerks stole his money letters and was sent to the state prison at W., which is said to be very *strong*.—A very full catalogue.

PETER HENDERSON & Co., No. 35 Cortlandt St., New York, issue a more ample catalogue even than usual, very neatly illustrated, and also an abridged list of "Everything for the Garden," including seeds, plants, fruits, etc.

KING & SAVAGE, Chicago, Ill., succeed to Jas. H. Morris, in the seed and implement business.

J. B. ROOT, Rockford, Ill., sends his Garden Manual and Seed Catalogue. Like that of last year, this gives really valuable instruction, and hints marked by practical common sense.

CHARLES SIZER, Mount Lebanon, Columbia Co., N. Y., sends his Shaker's Catalogue in a most unshakerly cover of blue and gold. The excellence of the seeds grown by the Shakers is generally admitted.

J. M. THORBURN & Co., No. 15 John St., issue as usual separate catalogues, one for vegetable and agricultural seeds, another for flower seeds, and still others for spring bulbs and tree seeds. Their catalogues announce that they offer $100 premiums, each, for the best collections of vegetables and of flowers exhibited at the Centennial from seeds purchased of them.

JAMES VICK, Rochester, N. Y., is a most uncertain man. No one knows what he will do next. He began with catalogues unlike those of any one else, and now he comes with a catalogue in the shape of a quarterly "Floral Guide," and more than this, he has a "Flower and Vegetable Garden." Both works are elegant, useful, and full of interesting matter, including not a little of Vick. He is so versatile that he sometimes "drops into poetry," pitches into Congress, writes notes of travel, and instructs his readers, and we trust, makes money.

FLORISTS.

PETER HENDERSON, 35 Cortlandt St., New York, and Jersey City Hights, N. J., sends the first florist's catalogue of the new year. It is embellished with a fine plate of the flowers of some of the new cannas and zonale geraniums in colors, and of course contains numerous "novelties."

NURSERYMEN.

DAVID BAIRD, Manaplan, Monmouth Co., N. J. A large assortment of peaches, with other fruits.

CHARLES BLACK, Hightstown, N. J., at the Village Nurseries, makes a specialty of peaches, and offers other stock.

A. M. BURNS, Manhattan, Kansas, has a general list of grapes and other small fruits, and the Burns Raspberry.

ROBERT DOUGLAS & SONS, Waukegan, Ill. Evergreen and Ornamental Tree Seedlings, and Tree Seeds. This establishment counts its stock by millions, and offers trees of various sizes at wonderfully low rates.

A. HANCE & SON, Red Bank, N. J., issue a special list of their small fruits, offering the Brandywine, Highland Hardy, and Canargua Raspberries as specialties.

E. W. HARRINGTON, Palmyra, N. Y., sends wholesale price-lists of the Palmyra Commercial Nursery.

R. S. JOHNSTON, Georgetown, Del., makes a specialty of peach-trees, and offers other stock.

C. K. KESLER, Bethany P. O., Tredell Co., N. C., offers general nursery stock at low prices.

TYRA MONTGOMERY, Mattoon, Ill. General nursery stock, with a special and full catalogue of Roses.

H. M. THOMPSON, St. Francis, Wis. Evergreen and deciduous forest-tree seedlings and tree seeds.

B. F. TRANSOU & BROTHER, Humboldt, Tenn., present their 26th annual catalogue, and are consequently no novices; they have various local fruits, besides a general stock.

JOHN WAMPLER, Carthage, Mo., has general nursery stock, and offers the Amsden peach.

EUROPEAN CATALOGUES.

ENGLAND.

ANTHONY WATERER, Knap Hill, near Woking, Surrey. The Knap Hill Nurseries have a world-wide reputation, and every American with a taste for horticulture, who visits England, makes it a point to visit the remarkable collection of conifers and rhododendrons, and other "American plants" to be found at this nursery.

WAITE, BURNELL, HUGGINS & Co., London. This is one of the heavy seed houses of the world, and sends out only wholesale prices current.

FRANCE.

CH. HUBER & Co., Hyéres, Var. This is one of the largest establishments in France for the production of flower seeds and the seeds of ornamental trees. Its 29th annual trade catalogue gives an astonishing variety, they send also a special list in English.

The Advantages of Keeping Accounts.—"F. G. F.," Genesee Co., N. Y., writes: "I have spent a large portion of my life on a farm, but feel as though I was just beginning to learn to farm. Three years since I kept an account, and found what crops cost me, and found I could not afford to raise poor ones. I sell my potatoes at 20 cents per bushel with a fair profit, while I know of fields every acre of which would bring the farmer 15 or 20 dollars in debt.

As to Patent Hay Rakes.—"M. E." Every different make of steel tooth rakes has some combination of parts, or some special part, that is patented. The elastic spring steel tooth is common to most kinds.

Turnips with Beans.—"R. W. W.," Perry, N. Y., writes that he planted eight acres of low, mucky land with red kidney beans. On the 20th of July, after cultivating the beans for the last time, purple-top strap leaf turnips were sown between the rows with a Holbrook hand drill. The beans yielded 21 bushels to the acre, and the turnips were a splendid crop. This being his first crop of turnips, is a very encouraging experience.

Dogs and Sheep.—"M. P.," Westchester County, N. Y., writes in reference to this troublesome question: "I propose that the *American Agriculturist* be a medium through which the sheep-raising and wool-raising question be discussed in relation to their greatest enemy, the dog. I would be willing to see all dog taxes removed, provided there was a law that every dog away from his master's premises should be muzzled. We have no right to prevent a person from keeping dogs on his own premises, or feeding them mutton either, but every dog off of his master's premises not muzzled, should be shot, and the person shooting said dog should be entitled to one dollar out of the funds of the town raised for that purpose. With such a law the farmer can keep sheep in any town, county, or state. It will prevent litigation, contention, or discord. The dog and sheep owners each having rights, will protect themselves by the letter of the law."—Our friend will find that this question is treated in a very practical manner in January. Farmers in nearly every state in the country are in a position to compel fair legislation on this question, and if they do not procure it, no one is to blame but themselves. One of the greatest difficulties is that the dogs which do most mischief are those owned by farmers, and they are the most careless of all in controlling them.

Value of Chicken Manure.—"C. R. B.," Bergen Co., N. J. If the manure is dry, and has been well kept, and the fowls have been fed upon grain, it ought to be worth about $20 a ton. Some market gardener in the neighborhood would probably purchase it. It is so rarely sold that there is no fixed market value for it. The value also greatly depends upon the manner in which it has been kept, as its ammonia is soon lost by exposure to the atmosphere.

Pork-Raising in Virginia.—A Virginia subscriber suggests the following method of raising pork in his locality, viz: to sow down different lots in clover, oats, southern peas and corn, and as the crops mature, to turn in the hogs to consume them upon the ground. Pork sells for 13 cents a pound, and very little is raised in the locality. Land can be purchased very cheaply, farms with buildings selling for $3 to $8 per acre.—Possibly this very rough method of making pork may be profitable as a commencement upon land so cheap as this, and may be made to serve a good purpose in improving the soil. If, however, a large, dry pen were provided and supplied with good water, and the crops were cut and fed to the hogs in it, and all the weeds, leaves, and rubbish of the land were to be gathered and thrown under the animals for litter, there would be a large gain. The loss of flesh consequent upon the hogs running about the fields would be prevented, and there would be a large saving in manure. There is no doubt that with pork at 13 cents a pound, and land at $8 an acre, there should be a good profit in raising pigs with a good kind, if they are well managed. One field should be reserved as an occasional pasture.

Right and Left.—A correspondent has got puzzled about right and left as respects the direction in which his hop-vines and bean-vines twine, and he asks us to tell him which is which, and why so. He reads, he says, that his pole beans "turn *against* the sun, that is from the left to the right hand of the observer," and that his hops "move like the hands of a watch, *with* the sun," *i. e.* from right to left. Now he says his watch does not do that, at least as a rule; for when the hands are at XII they move from left to right, and when at VI they then move from the right to the left of the observer. That reminds us of the student's examination, who, in reply to the question, whether the sun moved round the earth or the earth round the sun, *hedged* cautiously by answering "sometimes the one and sometimes the other." But, not to make fun of a serious matter—for there really is no little confusion growing out of the way in which these things are expressed in the books—let us help our worthy correspondent by asking him to put his watch down in a chair, face up, and see which way the hands move by walking round the chair in the same direction. He will perceive that he is turning to the left all the way round. If he walks around his hop-pole following the turning of the hop, he will do the same thing, but if he follows his bean-vine he will go the other way round. The confusion which has got into the books, in describing the turning of vines or the direction of overlapping or twisting of parts, has come from two different ways of looking at the right and left. Linnæus and the writer our correspondent has got hold of, conceive of the observer as standing outside of the turning thing and following it round. That this is the more natural and the commoner view is clear from our calling a common screw, the thread of which rises from left to right, a right-handed screw. But the DeCandolles and many others take it the other way, and say that the bean turns from right to left, they either conceiving the thing itself to have a right and left, which cannot be so long as it has no front and back, or rather that the observer is placed within the coil. And if we were in the habit of viewing such objects from an inside view, their's would be the natural expression. Mr. Darwin, in his Climbing Plants, avoids any obvious ambiguity by not using the terms right and left—at least it is so where he speaks of the hop-vine,—but saying instead *with* the sun or *against*. And here the observer is most naturally regarded as inside, which is practically all right. But to an observer outside of the circle, the apparent revolution would be opposite.

Dikes and Ditches.—"W. W.," Mason Co., W. T. If a dike is well constructed with a ditch upon each side, a very good permanent fence may be thus made. The cheapest plan would be to cut the sods along the fence row and lay them up in two rows two feet apart, leaving a space between them. Then with one horse and a plow loosen the earth where the ditch will be, and throw it between the lines of sods with a shovel. There will be no necessity to use a wheelbarrow, as the earth will only need to be lifted from the ditch to the dike. Two men with a suitable machine to cut the sods ought to make the ditches, and lay up 7 rods of such fence in a day, the ditches being 3 feet wide and 2 feet deep, and the fence being 2 feet wide and 3 feet high between the sods. If anything is needed upon the dike to prevent trespass by stock, stakes or posts may be built into the dike 10 feet apart, and one or two wires stretched along the row. Such a fence would be safe and indestructible by winds or fire.

Fleas in the Barn.—"C. H. B.," Lancaster Co., Pa. When a barn is infested with fleas, there is probably some cause for it that might be removed. Poultry will sometimes stock a barn with such vermin when they are permitted to roost in it. If hogs are kept under it, or manure is allowed to accumulate about it, vermin will gather and soon stock it. If any such cause as this exists, it should be removed. Then when the barn is empty in the summer, it should be well cleaned out, a quantity of hot clear coals should be placed upon a heap of earth on the floor, and the doors being closed, a pound of sulphur should be burned upon the coals. After a thorough fumigation, the barn should be white-washed inside.

Lime Kilns.—"W. E. K.," Lancaster Co., Neb. If lime is burned with fine soft coal, the ashes will be of no injury, and of little or no inconvenience. The fine slack coal that is thrown away at the mines or yards, may be used to burn lime. If the lime is carefully burned, there will be no cinders left. As good lime may be burned in the cheapest kilns, as in the most costly ones.

Circus Horses.—"J. W. M.," Queen Ann's Co., Md. The curiously spotted or patched horses, common in circuses, are of Arabian blood. Perhaps this is the reason why they are more docile and intelligent than common horses, as there is no horse that is so enduring, or that can be so easily trained, or is so tractable or gentle as the Arabian. There is no record kept of this breed.

Some Question as to the Management of a Dairy.—"Mrs. J.," Rockbridge Co., Va. Very good plans for spring dairy houses were given in the *American Agriculturist* for October, 1874. A fire in a stove need not injure the flavor of the butter if it is properly managed. It must not be permitted to smoke, but the draft should always be kept perfect. Nor would the heat from a stove injure a cement floor. A brick floor may be laid upon the cement for the stove to stand upon, or a square shallow pit may be left in the floor in which the stove may stand if injury is apprehended. Fine wire gauze is the best screen for the windows. The screens should be made in a frame to fit the sash so that they will slide up or down. The best cover for a milk crock is a cover of the same material, or a piece of flat tile or slate; wood is not desirable. The dairy should be well ventilated, but without drafts or currents of air. A large opening in the ceiling that can be wholly or partly closed by a trap-door and a cord would be advisable. The best dairy salt is either the English Ashton salt, or the Onondaga "factory filled" dairy salt. The latter is a home-made, equal to the foreign, and cheaper.

Ringing Pigs.—"Ed." Pigs may safely be ringed as soon as they are old enough to do mischief. If you had given your full name and address, and sent a stamped envelope, (a thing often neglected), we would have sent by mail the information you wished.

A Profitable Dairy.—"T. A. C.," Solsville, N. Y., sends us a statement of the yield of his dairy of 20 cows, from two to five years old: this was 5,012 lbs. of butter, which was sold at 40 cents per pound, producing $2,004.80. These cows have been bred with care for a number of years, and are of Short-horn descent, showing that the ancient good character of this stock for the dairy, may still be retained by care in breeding.

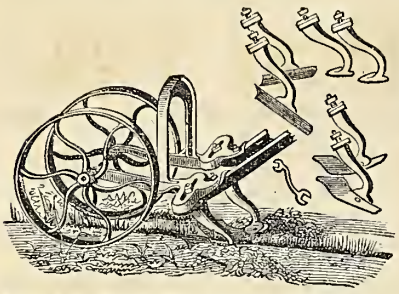
Indigestion in a Cow.—"R. O. B.," Fairfield Co., Conn. When a cow disgorges her food, it is a symptom of irritation in the stomach and indigestion, probably arising from the presence of too much acid. We would give her two drams of carbonate of ammonia, with one ounce of ground ginger in some scalded bran. This should be given once a day for a week. Afterwards she should have a little salt and pounded chalk to lick every day as long as she will take it.

Salt For Wheat.—"D. M. S.," Geauga Co., Ohio. Salt is generally sown upon wheat in the spring, as soon as the growth has commenced. One or two bushels per acre, are sown evenly over the crop. The effect is to stiffen the straw, and prevent the wheat from lodging, and sometimes it has the additional effect of producing a clear light colored grain. Some farmers sow as much as a barrel or 5 bushels to the acre.

Night Soil.—"E. C.," Somerset County. There is no good reason why the night soil of a town should be rejected as a fertilizer, but many reasons why it should be regarded as of great value. The prejudice against using it is a relic of ancient times, when even animals' dung, which we value so highly, and is so indispensable to us, was rejected as being "unwholesome." The "Five Points of Good Husbandry," a book written about 300 years ago, referred to the use of animal dung in this manner. Some consider the contents of privies as unfit to use. The truth is, that this matter is the richest of all animal manures, and if used upon grass lands or root crops, might enter into our agricultural system with great economy and a vast benefit to the public health.

How to Improve Land.—"N. M.," Shenandoah Co., Va. It is as vain to try to improve badly run down land without manure, as to attempt to fatten an animal without food. If there is no manure to be had, it is almost hopeless to expect to improve exhausted land by growing crops to plow under. It is not always safe to trust to lime or plaster. If the soil happens to be abundantly supplied with every other necessary ingredient, except lime or sulphuric acid, then lime or plaster may be useful. If the soil has still heart enough left to produce clover, there is a favorable prospect for its gradual improvement, by growing this crop and plowing it under. In this case 100 lbs. of plaster, sown upon the clover when it is young, may be very beneficial. When clover can not be grown, buckwheat may be tried as a substitute, until two or three crops have been turned under. It will perhaps be cheaper in the end, to purchase manure or such a fertilizer as guano, than to wait for the slow process of improving land by means of buckwheat.

A Preventive of the Heaves in Horses.—"C. W. N.," New Bedford, Mass., sends the following prescription for a mixture which he has used successfully as a preventive and cure for the heaves and a cough in his horses. It is one pound ground ginger, one quart of salt, 4 ounces hard wood ashes, 2 ounces ground black pepper, and one ounce each of pounded rosin and salt peter. The whole is mixed together, and a table-spoonful is given in the feed twice a day, to a horse that coughs, or breathes with difficulty.—A cough or difficulty of breathing, similar to what is called the "heaves," frequently occurs from indigestion, and the production of gas in the stomach or bowels. The above mixture would have a beneficial effect in such a case, but no use when the trouble exists in the lungs.



Planet Jr. Double Wheel Hoe—1st Hoeing.

ALLEN'S PLANET Jr. Silver Medal Seed-drills

AND WHEEL HOES PERFECTED FOR '76.

They "SOW *like a charm;*" *no packing* of seed in the hopper, *no crushing* it, *no difficulty* with *chaffy* or *soaked* seeds, *no watching, no pausing* or *waste* at the ends, *no irregularity* in depth, *no skips, no springs* or *gearing* to wear out, *no noise*, NO EQUAL. No. 2, holds 2½ qts.—No. 3, holds ½ bush. and sows Fertilizers.

THE COMBINED machine, the AGRICULTURIST PREMIUM, (see Premium List), holds 1 qt., and "*is a perfect seed-sower.*" It has one pair of hoes for general work, one for heavy furrows, a plow and subsoiler. THE DOUBLE WHEEL HOE (see cut) works *easier, better, and six to twelve times faster* than the hand hoe. Wheels can be set two, six, or ten inches apart. It has three different pairs of hoes, and a pair of subsoilers; ALL our blades are steel, tempered and polished. Will work 6, 9, or 10 inch rows, TWO AT ONCE, *often saving cost in a day.*

Our NEW polished steel blade HORSE HOE, perfected after ten years of experiment, and trial by our S. L. Allen, a practical farmer. *Saves* most of the hoeing, and *makes the remainder easy;* leaves the ground *level or ridged* as desired, *opens furrows, hills,* and cultivates shallow or deep, and is a thorough weed killer. Especially adapted to the wants of *Market-Gardeners, Broom Corn, Tobacco, Cotton, Rice, and Root* Growers, and all lovers of thorough work; should be owned *by every farmer.* Send for cuts with full description and testimonials, free. *Mention this paper.* S. L. ALLEN & CO., Sole Manfrs., 119 S. 4th St., Phila., Pa. **We must have A LIVE AGENT in every town.**

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Wagon in the Market.

The original, well known

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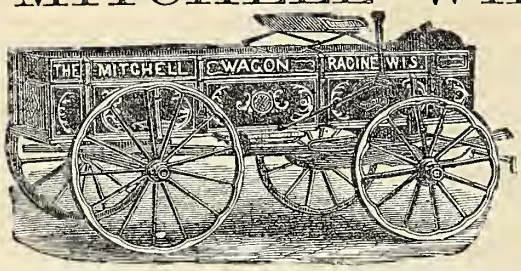

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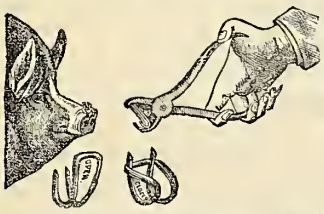

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The only Ring invented that will effectually prevent Hogs from Rooting. Being a Double Ring, and having no sharp points in the flesh, it does not cause irritation or soreness, as in other Rings. The smooth part of the wire being in the nose, it heals rapidly. One of our rings being equal to two or three of any other ring, makes this ring cheaper than the cheapest. Time and money saved in using the Champion. One operation, and the work is done.

Price of Hog Ringer, 75c. each; Coppered Rings, 50c. per 100; Tinned Hog Rings, 60c. per 100; Hog Holder, 75c. each.

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ASK YOUR DEALER FOR THEM.

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Made entirely of Cast Iron and lined with Porcelain. Milk discharge pipe does not pass through the water. Pan is easily removed from vat. Water in vat regulated to any hight. Will be ready for sale in January, 1876. Agents wanted for State of New York. Apply to

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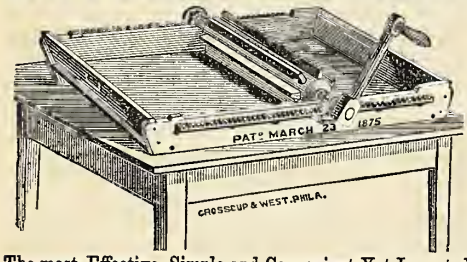

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THREE SIZES.

Works 30 lbs. in less than 5 minutes.

"It is a machine that should be in every dairy, small and great."—*William Crozier, Northport, L. I.*

Send for circular and price lists.

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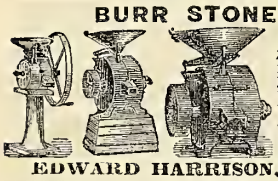

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FOR **16$** Fan blowing—no bellows. Weld—3-inch iron. Send 3-cent stamp for Catalogue to

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BLAKE'S PATENT Stone and Ore Breaker

Crushes all hard and brittle substances to **any required size.** Also, any kind of STONE for ROADS and for CONCRETE, &c. Address BLAKE CRUSHER CO., New Haven, Conn.

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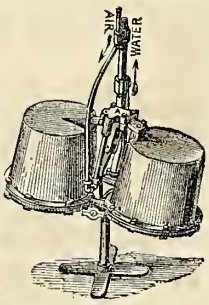

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Portable Engines and Boilers, Vats, Hoops, Presses, Screws, Cans. Every article needed in Cheese Factory or Creamery. Send for Circulars.

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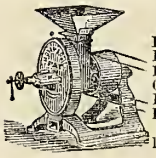

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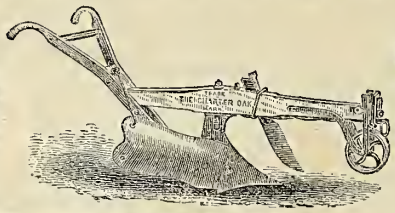

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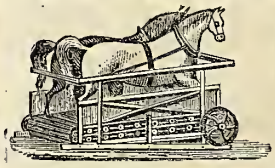

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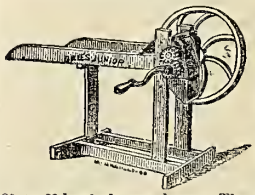

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I have also invented the best, cheapest, and **easiest worked** Turnip, Pumpkin, Potato and Carrot Cutter. The $13 size, turned by a boy, easily cuts a bushel in less than two minutes. You are not required to pay for any of my cutters until tried on your farm and found entirely satisfactory, and that all I claim for them is true. **I make allowance** for freight. Circulars free. See November number *American Agriculturist.*

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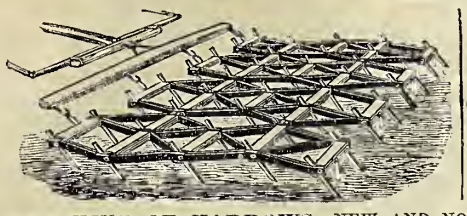

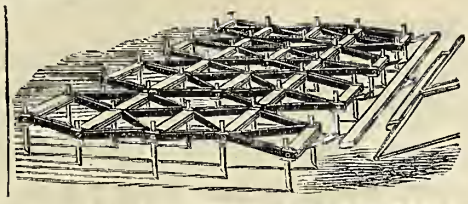

THE KING OF HARROWS. NEW AND NOVEL. TRIED AND APPROVED. AS INDISPENSABLE TO THE FARM AS A PLOW. Its peculiar construction *insures lightness of draft, and great strength.*

Is universally admired; the common expression is, "*Just the thing we have been looking for.*" Sells at sight, as it supplies a want long felt, viz.: A perfect smoothing Harrow, combined with a first-class vertical or straight-tooth Harrow, at a price usually charged for a smoothing Harrow. By drawing from one side, (as shown in the cut), we have a four section hinged 40 steel-tooth Harrow, and by simply changing the draft to the opposite side, we have a perfect Smoothing Harrow. We also manufacture for the West a Harrow of the above description in 6 sections, for four horses abreast, which covers 18 feet of ground in width. Send for Descriptive Circular to

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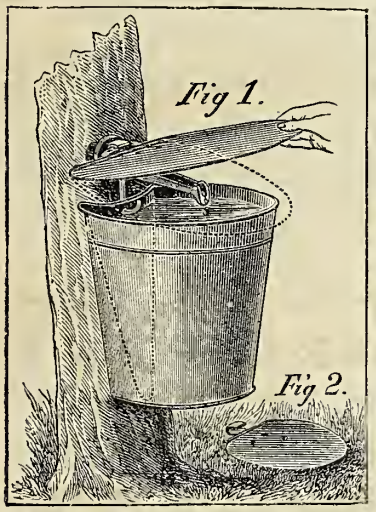

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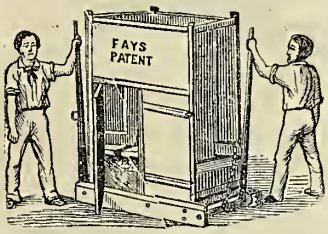
FOUST'S HAY LOADER, Improved for 1876, including Wind-Break Attachment. Warranted to pitch a ton of hay from the winrow in five minutes, and take it as clean as by the hand fork. Adapted to all ordinary meadow land, and to any farm wagon. Manufactured by STRATTON & CULLUM, Agricultural Works, Meadville, Pa. Send for Descriptive Circulars early.



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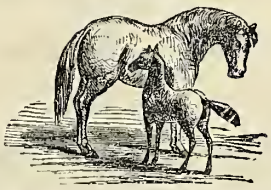

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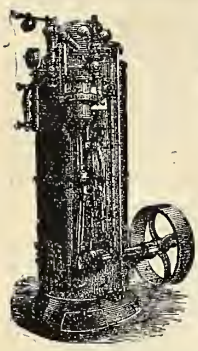

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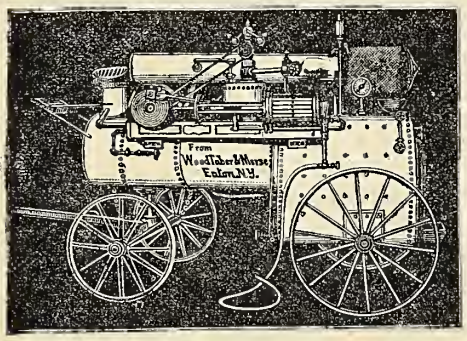

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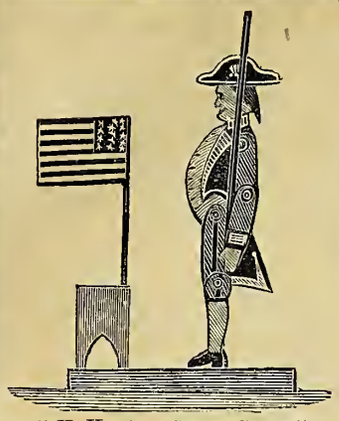

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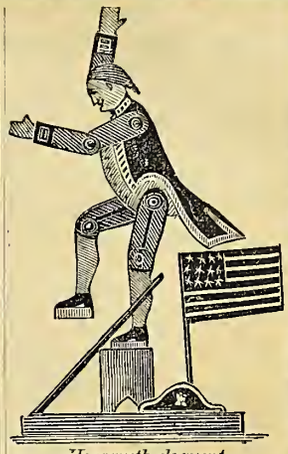

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How he "sells his vote."

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"Yankee Doodle."

He walks "on time."

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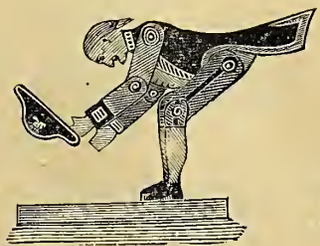

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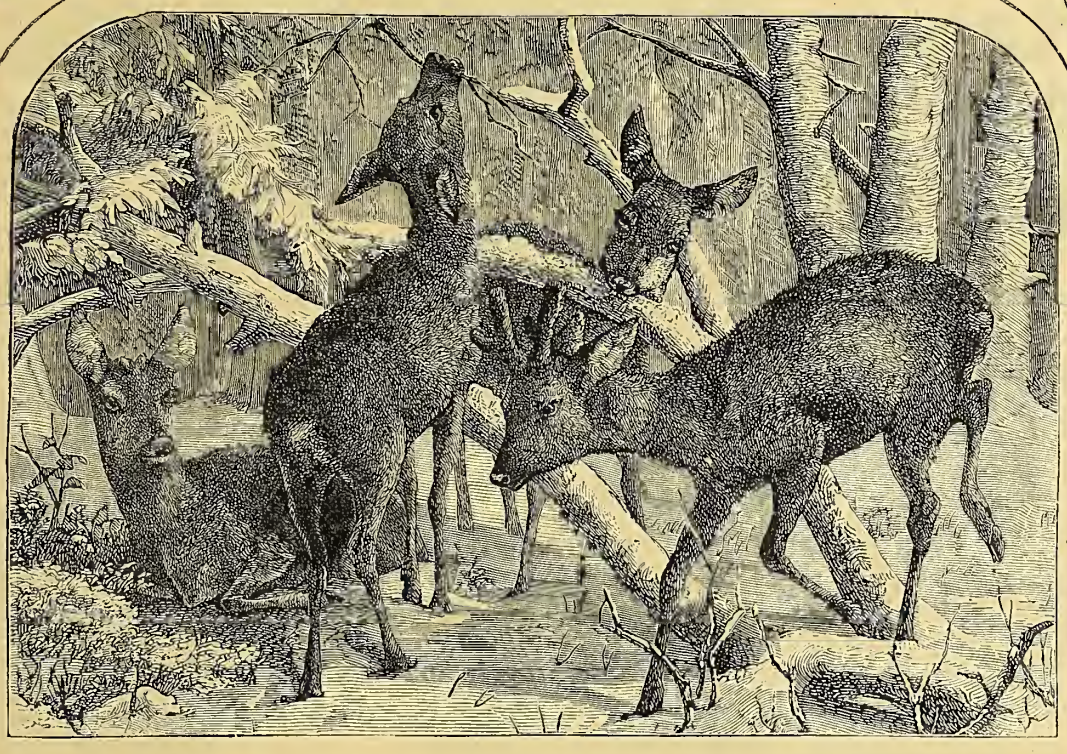

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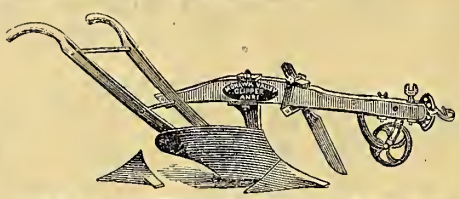

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THE ROCKY MOUNTAIN SHEEP, OR BIG HORN.—*Drawn from Life, and Engraved for the American Agriculturist.*—(*See p.* 90.)

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Calendar for March.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n sets.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	W	6 36	5 50	morn	6 34	5 52	morn	6 33	5 53	morn
2	T	6 34	5 51	0 19	6 32	5 53	0 14	6 31	5 54	0 8
3	F	6 33	5 52	1 36	6 31	5 54	1 29	6 30	5 55	1 22
4	S	6 31	5 54	2 48	6 29	5 55	2 40	6 28	5 56	2 32
5	S	6 29	5 55	3 48	6 28	5 56	3 41	6 27	5 57	3 33
6	M	6 28	5 56	4 37	6 27	5 57	4 30	6 26	5 58	4 24
7	T	6 26	5 58	5 16	6 25	5 59	5 11	6 24	5 59	5 6
8	W	6 25	5 59	5 47	6 24	6 0	5 44	6 23	6 0	5 40
9	T	6 23	6 0	6 14	6 22	6 1	6 11	6 21	6 1	6 9
10	F	6 21	6 1	rises	6 20	6 2	rises	6 19	6 2	rises
11	S	6 19	6 2	7 50	6 18	6 3	7 49	6 18	6 3	7 48
12	S	6 17	6 3	8 58	6 16	6 4	8 55	6 16	6 4	8 52
13	M	6 16	6 4	10 5	6 15	6 5	10 1	6 15	6 5	9 57
14	T	6 14	6 6	11 11	6 13	6 6	11 6	6 13	6 6	11 1
15	W	6 12	6 7	morn	6 12	6 7	morn	6 12	6 7	morn
16	T	6 10	6 8	0 18	6 10	6 8	0 14	6 10	6 8	0 5
17	F	6 9	6 9	1 21	6 9	6 9	1 14	6 9	6 9	1 7
18	S	6 7	6 10	2 17	6 7	6 10	2 9	6 7	6 10	2 2
19	S	6 5	6 11	3 4	6 5	6 11	2 57	6 5	6 11	2 50
20	M	6 3	6 12	3 42	6 3	6 12	3 35	6 3	6 12	3 29
21	T	6 2	6 14	4 13	6 2	6 13	4 8	6 2	6 13	4 3
22	W	6 0	6 15	4 41	6 1	6 14	4 37	6 1	6 14	4 33
23	T	5 59	6 16	5 3	6 0	6 15	5 1	6 0	6 15	4 58
24	F	5 57	6 17	5 24	5 58	6 16	5 22	5 58	6 16	5 21
25	S	5 55	6 19	sets	5 56	6 17	sets	5 56	6 17	sets.
26	S	5 53	6 20	7 37	5 54	6 18	7 35	5 55	6 18	7 32
27	M	5 52	6 21	8 51	5 53	6 19	8 47	5 54	6 19	8 43
28	T	5 50	6 22	9 57	5 52	6 20	9 51	5 53	6 20	9 47
29	W	5 48	6 23	11 24	5 50	6 21	11 17	5 51	6 20	11 11
30	T	5 46	6 24	morn	5 48	6 22	morn	5 49	6 21	morn
31	F	5 44	6 25	0 41	5 46	6 23	0 35	5 47	6 22	0 26

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AMERICAN AGRICULTURIST.

NEW YORK, MARCH, 1876.

What has been the effect of the mild winter upon the fall-sown crops, we cannot as yet say. The effect upon the live stock is the principal thing to be dreaded. A warm, damp winter, makes an unwholesome barn-yard, and trouble may be looked for so soon as the warm spring suns have their effect. The least sign of discomfort amongst the stock should receive immediate attention. A dose of simple medicine, a little sulphur, or even a little nursing, with some warm slops or extra food, will generally prevent a serious attack, or the loss of a valuable animal. No farmer can succeed at the present day unless he be a "*book farmer*," and the first book he will need at this time will be a memorandum book in which he may jot down whatever may occur to him as needing to be done. If he attends to this "book farming" properly, he will find that a good many entries will have to be made, and everything set down should be taken up in order. The secret of those who are known as great workers, is that they work methodically, and do everything at the proper time, and there is no business in which so much will fail, unless the work be done when it should be, as that of farming. One day's delay may not be recovered during the whole season.

Hints about Work.

The Workshop.—The increase in the machinery used upon farms make it desirable to have a properly furnished workshop. It will not pay to run to the carpenter or the blacksmith when a little repair is needed. The time lost is too valuable, and the yearly bill for repairs is a serious item. One of the useful results of machinery is to increase the value of a man's time, and this should be provided for.

Cleaning up.—This is an important job, and can be done during rainy days. Clean out the potato bins, select seed potatoes, thoroughly clean and whitewash the cellar, put the dairy into good condition, sweep the granary; every cobweb and hiding place for weevils and grain moths to deposit their eggs in should be explored and filled with whitewash; the feed rooms and mixing troughs should be swept or scraped, the yards scraped, and the rubbish burned; the plows painted, and the shares and mold-boards polished; the harrow teeth sharpened, and everything that can be done now, should be attended to. *A little forethought is worth a great deal of afterthought.*

Manure may be hauled on to fall plowed ground intended for spring crops, upon the late snows or on the frozen ground in the early part of the day. That intended for corn should be carefully turned, and well mixed, to equalize its value. Mix the droppings from the poultry roost evenly in the heap. A few bushels of wood ashes thrown in will not hurt the manure if the whole is well mixed together, and they will help to decompose it, but this should be cautiously done. Coarse, fresh manure for fall crops may be hauled out, and made into a compost near where it will be used.

Surface Water.—Turn the wash from the public roads into the fields where it can be made to spread over and fertilize as much surface as possible.

Fence posts may be made firm by tamping with a rammer, a flat stone rammed down against a loose post will be useful, and as many stones as possible should be thus driven around the posts. Stakes should be driven down firmly while the ground is soft, after the frost has disappeared.

Plowing.—No plow should be put into the ground until the soil is dry. When a spadeful of earth thrown down crumbles into a loose mellow heap, the plows may be started, but not while the spade comes out of the ground smeared and soiled. A few days delay is better than being a day too soon. The first in the field is often the last at harvest.

Artificial Fertilizers.—In the southern and middle states where grass or clover have started growth, guano or plaster may be applied now; the best time is when the fields have a green and fresh appearance, showing that vegetation is already active and ready to be assisted; 100 pounds of each, or both together, may be sown over an acre.

Potatoes.—Plant early potatoes as soon as the ground is dry and warm. A few early frosts will do no harm if the young shoots are kept covered by the hoe or the plow when a frost is feared. The earlier the crop, the higher the prices. A difference of a week may make a difference of $1 a bushel.

Spring Wheat.—The earlier this crop is in the ground the better. Now that the new process of grinding has been brought into use, the value of extra spring is equal to that of the best fall wheat. It is as easy to produce extra wheat as No. 3 or rejected. The whole difference is just that between careful and slovenly farming. Perfectly clean seed, of a pure variety, and well prepared ground, will produce first quality of wheat; but with foul seed, mixed with oats and rubbish, as we sow, so we reap. Minnesota farmers are making a world-wide reputation for their wheat, which is now sought in foreign markets, by producing a superior sample. This is worth making a note of.

Meadows.—No stock should be allowed to wander over the meadows. This is doubly injurious. It destroys the grass and spoils the appetite of the animals for dry feed. Nothing is gained, but much is lost by this practice. The ground is also "poached," and quagmires are formed in low springy spots where the first grass appears.

Mares in foal should not be tied up in their stalls; but kept in loose roomy stalls not less than 9x11 feet. It would be far better if no horse were kept in a stall of less size than this. Some horses will not lie down in a narrow stall until forced by fatigue, and many wounded hips and backs are caused by contact with the walls of narrow stalls. Brood mares may be worked lightly; they are better for the exercise. A feed of carrots, ruta-bagas, or sugar beets daily, will be useful, or instead of these a quart of linseed oil-meal, with their usual feed, may be given. Costiveness in any breeding animal is to be carefully guarded against.

Cows.—The safest place for an incoming cow is a roomy box stall. See last month's "Hints."

Calves.—A calf should never be allowed to suck if it is possible to avoid it. As soon as its coat is dry it should be taken from the cow and put into a stall next to her, where she can see it. This is better than separating them altogether, unless the calf can be removed entirely to where the cow cannot hear it. A calf may be taught to drink in one les-

son if patience is used, and it has not sucked the cow. It should have the fresh warm milk for a week, then warmed half-skimmed milk for a time, and finally warmed skimmed milk. While the weather is cool, the milk should be warmed and given a little sweet; well boiled linseed-meal gruel is an excellent addition to the milk.

Swine.—A farrowing sow should be littered with chaff or finely cut straw in a dry warm pen. It would pay where many brood sows are kept and early pigs raised, to have a stove in the piggery. Highly bred pigs are often tender and delicate, and warmth may save a litter that would otherwise be wholly lost. Generally, a close warm pen will be sufficient, as few other young animals are better able to take care of themselves than pigs.

Sheep and Lambs.—The draft upon the nursing ewes should be met by a supply of nutritious food. The kind of food should be suited to the kind of sheep. Merinos will consume corn without injury, but the heavier bodied sheep will do better on a mixed food. A bushel of corn, with the same quantity of oats, or rye and bran, ground together, and mixed with a bushel of linseed oil-meal, is a good feed for nursing ewes. One pound a day, with some cut roots or a few potatoes, will help both ewe and lamb. A run in a corn stubble on fine days will be very useful for the whole flock, but not if there is deep snow upon the ground, or the soil is muddy.

Poultry.—It is now time to set hens for early chickens. Warm corners in the stables or barns may be appropriated for this purpose where the other poultry are not permitted to go. The nest box may be carried there quietly at night and the hen left undisturbed. The advantage of having loose nest boxes is, that the box and its occupant may be moved to wherever it is to remain.

Vermin.—It is now that vermin give most trouble. Whenever "cow licks" are seen upon cattle lice may be found. A good remedy consists of an ointment made of a pound each of lard and crude petroleum mixed together with a quarter of a pound of flowers of sulphur. This rubbed along the spine and the inside of thighs of calves and cattle will soon free them from lice. It will also free hogs and poultry from fleas, and is not injurious in any way. Bare irritable spots upon the tails or necks of horses may be also treated with this.

Work in the Horticultural Departments.

As the planting and sowing season approaches, the letters embodying the inquiries, "What shall I plant?" "What shall I sow?" become more numerous. These questions coming from all over the country are difficult to answer, as they cover a wide variety of climate and locality. We have often pointed out the fact that many varieties, especially of fruit, are local, and are not suited for general culture. On the other hand, there are a few kinds that succeed almost everywhere, and though these are not usually of the highest quality, their general adaptability compensates for the lack of great excellence. We repeat here what we have so often stated. The experience of the neighborhood is the best guide. If one undertakes extensive cultivation either in orchard, vineyard, or market garden, he should study the leading works that have been written upon these subjects.

Orchard and Nursery.

The land should have been prepared last fall; but if that was omitted let be done early and well. Order trees at once if not done. When trees arrive, unpack at once and heel them in—which means place them in trenches with the roots well covered with earth; they will remain in this way for weeks without injury. Do not plant in wet soil, or that which is partly frozen. Planting should not be hurried; each tree should be examined; the broken roots trimmed smooth; the tops shortened by cutting back the branches one-half or two-thirds, and then set out with good earth around the roots, which should be well worked in to fill every space.

Apples.—The following list of 20 will answer for most of those who plant for family use: *Summer*—Red Astrachan, Early Harvest, Williams' Favorite, Benoni, Golden Sweet, Carolina Red June. *Autumn*—Gravenstein, Duchess of Oldenburgh, Jersey Sweet, Porter, Keswick Codling, Mangum. *Winter*—Northern Spy, Baldwin, Rhode Island Greening, Esopus Spitzenburgh, Roxbury Russet, King of Tompkins County, Wine, Jonathan.

Pears.—Dwarf pears, on quince roots, are now little planted, save in gardens—except the Duchesse d'Angouleme, which yields larger and better fruit as a dwarf. The popular pear is the Bartlett; nurserymen say that out of every hundred trees planted 90 are Bartlett. The amateur who has leisure can indulge in a great variety of choice kinds; those who wish fruit for home use and to market the surplus, can take any of the following: *Early*, Doyenne d'Eté, Bartlett, Doyenne Boussock. *Fall*, Duchesse d'Angouleme (on quince), Bell Lucrative, Seckel, Beurre Bosc, Louise Bonne de Jersey (better on quince). *Late*, Beurre d'Anjou, Lawrence, Vicar of Winkfield, Winter Nelis.

Peaches.—Those who cultivate for market will do well to follow the lead of the successful growers. For home use Early Beatrice, Hale's Early, Early York, Oldmixon Free; George the Fourth, Ward's Late Free, and Heath Cling, are among the best.

Quinces.—The apple or orange variety is most popular, but is inferior to Rea's Seedling.

Cherries.—Among the best are Black Tartarian, Coe's Transparent, Rockport, Louis Phillippe, Late Duke, and Black Hawk. Early Richmond is the best cooking variety.

Plums can generally be fruited only where time and labor can be given to destroying the curculio. Some native seedlings are said to mostly escape its attacks; the principal of these is the Wild Goose, of which spurious sorts are sold. Of the European plum, the Green and Imperial Gages, Coe's Golden Drop, Jefferson, and Washington are good varieties.

Mulberries.—Downing's Everbearing, and in mild climates, the Black Persian.

The distances apart for trees varies with apples from 20 to 40 feet, the greater distance being given on strong soils to the spreading varieties. Standard pears 20 to 30 feet; dwarfs 8 to 12 feet. Peaches, plums, and cherries about 15 feet.

Fruit Garden and Vineyard.

The fruit garden should be confined to what are known as the small fruits, and no trees larger than dwarf pears are to be grown in it.

Blackberries.—The Kittatinny is the most generally successful. Wilson's Early is a good market fruit. Set in rows six feet apart, as early as possible. The canes of both blackberries and raspberries grow one year, bear fruit the next, and then die.

Currants.—Versailles, White Grape, and Black Naples. Set 4 or 5 feet apart, and manure well.

Gooseberries are set the same distances; the English sorts rarely escape mildew; Downing's and Houghton's are best for kitchen uses.

Raspberries.—Set in rows 6 feet apart and the plants 4 feet apart. The Philadelphia is most hardy and productive, but the fruit inferior. Clarke, Herstine, Hudson River Antwerp, and Brinckle's Orange are choice sorts, but mostly tender. Highland Hardy is a new kind highly praised; of the black raspberries, the Miami and Seneca.

Strawberries.—After trying various methods, we have adopted cultivation in rows 3 feet apart, the plants a foot apart. When the bed needs to be renewed, the runners are allowed to take root in the intermediate spaces; when well-established, all save one row of these young plants are spaded up. Charles Downing still proves the best family berry for all soils; Wilson is only fit for market. Nicanor is good on heavy soils. Black Defiance is a fine fruit for home use. Triomphe de Gand and Jucunda give fine large fruit on heavy, as does Seth Boyden on light, soils.

Grapes can be grown in the most limited space, and may be trained to a fence, the side of a building, or to a trellis made for the purpose. They may be set from 8 to 12 feet apart, according to the space to be covered. Do not set old vines; those one or two years old are preferable. A young vine should produce but one shoot the first year. Concord is the universally successful variety; the list is large; in our experience Creveling, Barry, Croton, Delaware, Eumelan, Senasqua, and Wilder, have proved the most satisfactory out of 50 varieties.

Kitchen Garden.

Each year many new varieties are offered; do not rely upon any of these for a main crop, but stick to the well tested sorts; buy all the novelties you can afford, as it is interesting to try them. This month is, in northern localities, early enough to start a

Hot-bed.—This is a frame covered with glass, which is placed over fermenting manure which affords heat; earth is placed upon the manure in which seeds are sown, or they are sown in boxes of earth which are placed upon the manure. Stable manure, in a heating state, may be used alone, or with half or more leaves. The bed is often built upon the ground, 4 ft. high, and a foot wider each way than the frame, which is placed upon top. A more economical use of the manure is to build a pit, 2½ ft. deep, and of a size to fit the sashes; this is planked up, the rear side to 12 in. above the surface, and the front towards the south, 4 in. above the surface. It may be filled with all manure, or a foot of leaves may be first put in, then 18 in. of manure, and all trodden down; 6 in. of good soil may be put on, or if boxes are used, only enough to cover the manure. Strips should run from the front to rear of the frame for the sashes to slide upon. The heat is at first violent; when the thermometer shows it is receding from 100°, sow seeds.

Cold Frames are like hot-beds, but set directly upon the ground. They are used to keep half-hardy plants through the winter, and to harden off those started in the hot-bed. They may be used for sowing seeds, and though the plants will not come on so rapidly as in a hot-bed, they will be much in advance of those in the open ground.—Plants now in frames must be hardened by exposure whenever the weather will allow.

Window Boxes, in small gardens, supply the place of a hot-bed or cold-frame. Seeds sown in boxes of earth 3 in. deep, and set in a warm kitchen window, the plants properly watered and thinned, and if need be, transplanted to other boxes of earth, will give an abundance of early tomato and other plants.

Asparagus.—Set plants one foot apart, in rows 2 ft. apart, in well manured soil, covering the crown 4 in. for a garden bed. In field culture set 2x3 or 3x4 ft. Colossal is best.

Beets.—Sow as soon as frost is out. Egyptian and Bassano for early—Long Blood for late.

Beans.—Early Valentine, Newington Wonder, and Dwarf Wax for bush sorts; Giant Wax and Asparagus for pole and snaps; Case-knife and large and small Limas for pole to shell. All are tender.

Cabbage.—Set plants from cold-frame as soon as frost is out. Sow in hot-bed, for second early, Jersey Wakefield, Early Summer, Winningstadt. Later in open ground, Drumhead, Flat Dutch, Drumhead Savoy, and Red Dutch, for main crops.

Cauliflower.—Sow Early Paris or Early Erfurt in hot-bed. Autumn Giant is good late.

Carrot.—Early Horn is best for garden, for either early or late.

Celery.—Dwarf White, Dwarf Crimson, and Boston Market; sow next month in open ground.

Chives are propagated by dividing old plants.

Corn.—Minnesota best early; Triumph best medium; Stowell's good late. Sow only in warm soil.

Cucumbers.—Early Russian and White Spine. Some may be started in pots, turned out later, and yield before those sown in open ground. Green Prickly, for pickles, is sown in June.

Egg Plant.—New York Purple and Black Pekin; sow in hot-bed, and keep warm.

Horse-radish is grown from pieces of root, set late.

Kohl Rabi.—Sow in open ground like cabbages.

Leek.—Sow early in rich soil; Large Flag is best.

Lettuce.—Sow in hot-beds; transplant to open ground when frosts are over—transplant any that

was wintered over. Early Simpson, Hanson, and Tennis Ball; make sowings in succession.

Melons.—Cassaba, Ward's Nectar, Prolific Nutmeg, and White Japan, are all good; sow in rich hills 6 ft. apart, when the soil is warm.

Onions.—South of New York onions succeed best from sets; plant early in very rich soil in drills 15 in. apart. When they can be grown from seeds sow the same distance apart; the soil cannot be too fine and rich; sow early. Wethersfield Red, Early Red, and Yellow Danvers are standard sorts. For gardens potato and top onions are often used, set in drills 15 in. apart, and 4 in. apart in drill.

Parsley.—Sow the Double or Moss Curled early in open ground, or gentle hot-bed.

Parsnips.—Sow Hollow Crowned as soon as the soil can be worked, in drills 18 inches apart.

Peas.—Carter's First Crop, or some other round pea may be sown, when the ground thaws. Alpha is the earliest of the wrinkled peas, but needs warmer weather. When Champion of England comes, no other pea is wanted. Little Gem, Premium Gem, and Blue Peter are good dwarf sorts, requiring no sticks, and useful to fill odd spaces.

Peppers.—Squash for pickling, and Sweet Mountain for stuffing, may be sown like egg plants.

Potatoes.—Put some early sort in a warm place to sprout, and plant for early as soon as frost is out. Alpha and Snowflake are new and very early. Early Vermont and Early Rose a little later, and good.

Radishes may be sown very early in open ground, or may be forced in a frame. French Breakfast, Early Turnip, and Olive-shaped are good short varieties; the Long Scarlet for long.

Salsify and Scorzonera, there is but one variety of each, sow the same as parsnips.

Spinach.—Uncover that wintered over when heavy frosts are passed, and hoe between the rows. Sow seed of Round-leaved early; New Zealand, for midsummer, may be sown in May.

Squashes.—Summer Crookneck is the best bush. Boston Marrow, Yokohama, Hubbard, and Butman, are favorite late sorts. A few for early may be started under glass in pots or on sods.

Tomatoes.—Sow in hot-bed and transplant to boxes or another hot-bed, or where there are but a few, to small pots; the object is to get a strong stocky plant, to set out as soon as it is safe. Conqueror and Canada Victor for early, and Trophy for the rest of the season, have not been excelled.

Turnips.—White Dutch, or Red Top Strap-leaf, for early, and Long White French, is the best late. Get in the early sorts as soon as the ground is ready.

Flower Garden, Lawn, Greenhouse, etc.

Being obliged to give unusual space to other departments, these can receive but little attention. In the flower garden the work is mainly that of preparation, as given in former months....In the greenhouse the increasing heat of the sun will require care in ventilation. Insects will increase rapidly, and must be kept under. Propagation should now be pushed, to give a full supply of bedding plants for the borders.

Horticultural Notes for the Southern States.

Fruit Trees, such as apples and others of tardy vegetation, can still be transplanted, but the chances of success diminish with every day's delay. Late transplanted trees must be headed back closely. Mulch such trees well, to counteract the effect of the dry weather, which, three years out of five, is likely to happen in April or May in this section.

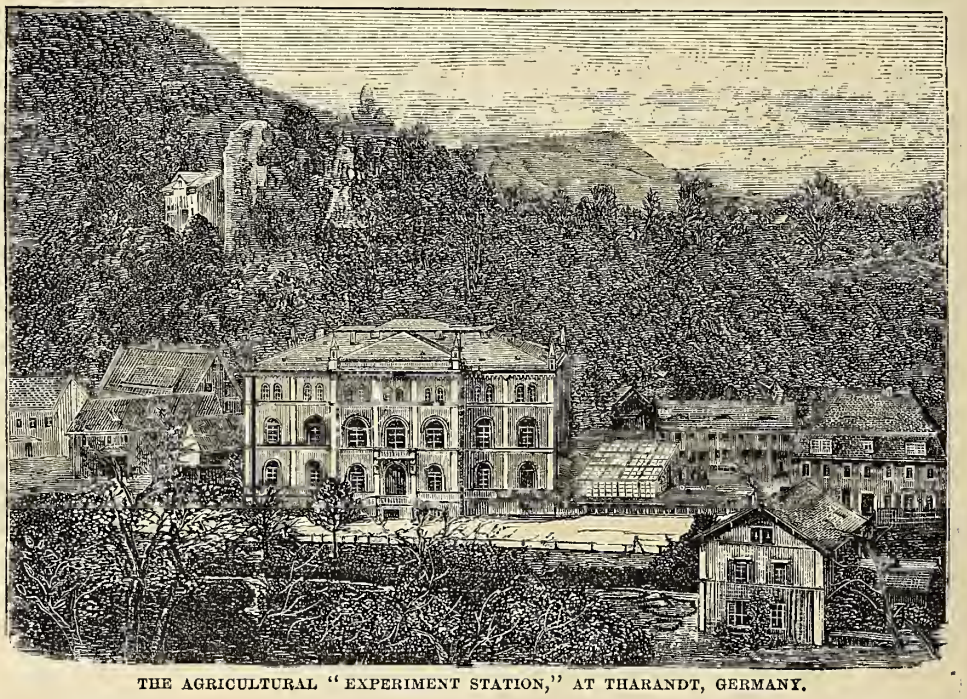
Grape Vines need attention towards the end of the month, remove suckers and tie up young shoots. Avoid planting cotton or grain crops in vineyards, as the vines need all the potash which the soil contains. In young vineyards of *Scuppernong*, cowpeas may be sown in rows to advantage; do not allow them to go to seed, but harvest for forage.

Peach Trees of which the collar has been left exposed during winter, must again be hilled up. Draw the earth up in a cone at least 8 to 10 inches high, previously throwing a handful of ashes around the collar, as a preventive against the borer.

Tomatoes, etc.—Systematic gardeners will of course have provided a full supply of tomato, pepper, and egg plants, to set out after the 25th of the month. It is unsafe to plant out sooner, unless protected in case of cold weather. It is not always a frost which injures tender plants, the effects of the March winds are equally as destructive.

Water Melons must be planted by the middle of the month in the middle sections, and earlier as we progress southward. Of late years the raising of melons for the northern markets, has become a noted item in the products of the south. In June the early crop is shipped from Florida, but the bulk of it, and the better portion, is harvested in July. The *Rattlesnake* variety, known in New York market as the Augusta melon, is conceded to be the best for shipping.

Bedding plants of the more robust classes, such as Geraniums, Heliotropes, Verbenas, etc., may be bedded out towards the end of the month, others more delicate must remain in-doors for some weeks longer, hence all such must be gradually hardened off by receiving all the ventilation possible.



THE AGRICULTURAL "EXPERIMENT STATION," AT THARANDT, GERMANY.

In a remarkably picturesque region, just out of the famous city of Dresden, in Saxony, 160 miles southeast of Berlin, cozily nestled between the hills, lies the little village of THARANDT. With its romantic scenery, its ruins of ancient castles on the crest of a hill, and below, its attractive villas, its quaint German houses, large roofed, low studded, many windowed, and withal, its delightful walks and pleasure grounds, it is a charming place, as many a tourist will bear witness. But to the student of agriculture the greatest attraction is found in and about the large building in the center of our engraving. This has long been the seat of a "School of Forestry," for many years under the direction of the illustrious COTTA. In connection with this is an "arboretum," containing over 1,000 kinds of trees and shrubs. (The agricultural department of the school has been lately removed to Leipsic). Here is the home and place of the life-long labors of STOCKHARDT, whose text-book of chemistry has been studied by many American youth, and his other works on the science of agriculture are known and read and followed in practice, the world over. His house is on the hill, a few rods to the left of the ruins, and his experiments have been made on the lands about, and in his laboratory in the school building. In this same building have labored the now noted botanist, SACHS, the chemist, HELLRIEGEL, and, if we mistake not, our own Professor STORER, who is doing such grand work for agricultural science in the "Bussey Institution" of Harvard University. Of more special interest to us just now, however, is the fact that here is the "*Tharandt Agricultural Experiment Station*," which has for years been under the direction of DR. NOBBE, some of whose exceedingly interesting and instructive experiments are described and illustrated on page 88 of this paper. Dr. NOBBE's laboratory and study are in the right end of the large building, and hard by, to the right, stands the glass-house in which the experimental plants were raised. This glass-house, built specially for such work, has a narrow-gauge iron track at the end door, on which runs a small platform car holding the jars shown on page 88; thus the plants can be easily taken to the open air on pleasant days, and run under shelter again at night, or when threatened by wind, dust, or rain. Whenever any of our readers go to Dresden, as thousands do, they should not fail to visit THARANDT. They will meet from Dr. STOCKHARDT a reception as kindly as his spirit is earnest and his labors successful.

Commercial Matters—Market Prices.

Gold has been up to $113¾, and down to $112¼, closing Feb. 12 at 112¼, as against 112⅞ on Jan. 13. The movements in domestic produce, thus far, this year, though not up to the expectations of operators, in all instances, have been, as a whole, relatively much more satisfactory than the business in general merchandise. The course of gold has been rather adverse to the export trade, but ocean freights have been ruling easier, tending to stimulate purchases for shipment. Foreign advices toward the close were more favorable for the Breadstuff interests, particularly so for Wheat. Dealings in Grain at the Produce Exchange have been quite largely on the basis of the recently established New York grades, with which operators are becoming more familiar from week to week. Nearly all current receipts of grain by rail are thus graded, and certificates issued to represent the grades and holdings of the several receivers, which certificates are transferred on the closing out of the property by sale. Options for future delivery have formed quite a feature in the month's transactions in Corn, the options having reference, in all instances of actual sales, to new mixed western, New York inspection....Flour, Wheat, and Corn have been moderately active, through the past month, closing with more firmness. The export inquiry—though somewhat fitful—has been fair The Wheat purchases for shipment have been, in good part, for Portugal. Rye has been quiet and weak as to values. Barley has been freely dealt in at variable prices, closing much lower and irregular. Peas and Oats have been moderately sought after at current rates. A very slow movement has been reported in Buckwheat and Buckwheat Flour at about steady figures....Provisions have been in moderately active request, closing, in the instance of hog products, generally, much stronger in price. Butter and Cheese and Beef, also firmer. Eggs,

decidedly lower, and in very liberal supply; demand comparatively moderate....Cotton shows less firmness, on a restricted trade....Wool has been fairly active, but toward the close quoted easier in price, under more urgent offerings of supplies....Tobacco has been in moderate demand and quoted about steady....Seeds have been moving rather slowly. Clover closed lower, on accumulating supplies....Hops in more request and held higher....Hay and Straw easier, on a light inquiry.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending February 14, 1876, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
28 d's *this* m'th	211,000	1,007,000	1,309,000	13,500	425,000	411,000
25 d's *last* m'th	332,000	735,000	1,017,000	39,000	231,000	593,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
28 d's *this* m'th	287,000	1,694,000	2,226,000	28,000	296,000	714,000
25 d's *last* m'th	393,000	2,814,000	1,871,000	47,000	281,000	1,918,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
28 days 1876..	211,000	1,007,000	1,309,000	13,500	425,000	411,000
26 days 1875..	216,000	513,000	2,811,000	9,200	218,000	374,000
26 days 1874..	402,000	3,175,000	1,004,000	61,000	106,000	895,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
28 days 1876..	287,000	1,694,000	2,226,000	28,000	296,000	714,000
26 days 1875..	279,000	2,096,000	2,907,000	21,000	142,000	1,119,000
26 days 1874..	296,000	2,312,000	1,597,000	131,000	813,000	1,437,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Feb. 7, 1876..	5,309,611	566,331	89,857	465,205	922,736	352,737
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,300	307,433
Dec. 7, 1875..	5,873,036	816,962	99,908	305,961	1,252,005	253,364
Nov. 8, 1875..	3,219,457	1,112,998	79,355	277,400	813,591	249,986
Oct. 11, 1875..	2,382,502	1,682,246	10,910	21,688	439,698	261,428
May 11, 1875..	969,804	1,542,924	16,124	16,537	545,300	229,655
Jan. 11, 1875..	3,653,122	1,049,900	50,889	191,470	877,014	145,647
Nov. 9, 1874..	3,680,141	1,727,540	19,123	117,185	794,722	135,882

4. *Exports from New York, Jan. 1, to Feb. 10.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1876...	207,647	1,558,121	1,592,314	15,387	—	33,756	125,068
1875...	179,882	1,266,529	1,412,517	—	90	11,384	9,784

CURRENT WHOLESALE PRICES.

	Jan. 13. 1876 7-8	Feb. 14. 1876 7-8
PRICE OF GOLD		
FLOUR—Super to Extra State	$4 20 @ 5 85	$4 25 @ 5 85
Super to Extra Southern	4 20 @ 8 50	4 25 @ 8 75
Extra Western	4 85 @ 9 50	4 90 @ 9 75
Extra Genesee	5 75 @ 6 75	5 75 @ 7 00
Superfine Western	4 20 @ 4 65	4 25 @ 4 75
RYE FLOUR	4 10 @ 5 40	4 10 @ 5 05
CORN-MEAL	3 00 @ 3 75	2 75 @ 3 50
BUCKWHEAT FLOUR, ₩ 100 lbs	1 90 @ 2 30	1 75 @ 2 25
WHEAT—All kinds of White	1 30 @ 1 52½	1 35 @ 1 55
All kinds of Red and Amber	95 @ 1 45	90 @ 1 47½
CORN—Yellow	63 @ 73	62½@ 70
Mixed	55 @ 73	59½@ 72
White	64 @ 73	60 @ 72
OATS—Western	44 @ 52	44 @ 52½
State	45 @ 52½	45 @ 52½
RYE	88 @ 97	86 @ 92
BARLEY	80 @ 1 35	70 @ 1 30
BUCKWHEAT, ₩ bush	58 @ 60	58 @ 60
HAY—Bale, ₩ 100 lbs	75 @ 1 12½	70 @ 1 10
STRAW, ₩ 100 lbs	60 @ 1 20	60 @ 1 15
COTTON—Middlings, ₩ lb	13¼@ 13⅝	13 @ 13¼
HOPS—Crop of 1875, ₩ lb	10 @ 15	12 @ 20
FEATHERS—Live Geese, ₩ lb	35 @ 58	32½@ 60
SEED—Clover, ₩ lb	13 @ 13⅞	13½@ 14⅛
Timothy, ₩ bushel	2 40 @ 3 00	2 45 @ 2 85
Flax, ₩ bushel	1 65 @ 1 70	— @ 1 65
SUGAR—Refi'g & Grocery ₩ lb	6¾@ 9⅜	6½@ 9⅛
MOLASSES, Cuba, ₩ gal	25 @ 38	22 @ 37
New Orleans, new crop, ₩ gal	45 @ 62	45 @ 63
COFFEE—Rio (Gold)	16¼@ 19	15 @ 18
TOBACCO, Kentucky, &c., ₩ lb	6 @ 25	6 @ 25
Seed Leaf, ₩ lb	6 @ 25	6 @ 25
WOOL—Domestic Fleece, ₩ lb	28 @ 60	27 @ 58
Domestic, pulled, ₩ lb	26 @ 50	25 @ 48
California, clip	14 @ 33	13 @ 32
TALLOW, ₩ lb	9 @ 9⅝	8⅞@ 9¼
OIL-CAKE—₩ ton	41 50 @45 50	— — @43 00
PORK—Mess, ₩ barrel	20 75 @21 00	— — @22 50
Prime Mess, ₩ barrel	19 00 @19 50	20 75 @22 00
BEEF—Plain mess	10 00 @11 50	10 50 @12 00
LARD, in trcs. & barrels, ₩ lb	12½@ 13¼	12¾@ 13¼
BUTTER—State, ₩ lb	20 @ 35	22 @ 33
Western, ₩ lb	14 @ 33	14 @ 33
CHEESE	4 @ 13¼	5 @ 14
BEANS—₩ bushel	50 @ 1 95	50 @ 1 85
PEAS—Canada, free, ₩ bu	1 20 @ 1 25	1 15 @ 1 20
EGGS—Fresh, ₩ dozen	27 @ 32	15 @ 20
POULTRY—Fowls	7 @ 19	10 @ 19
Turkeys—₩ lb	12 @ 19	12 @ 19
Geese, ₩ pair	1 25 @ 2 50	1 50 @ 2 50
Geese, ₩ lb	6 @ 14	10 @ 14
Ducks, ₩ pair	55 @ 1 25	60 @ 1 25
Ducks, ₩ lb	9 @ 18	10 @ 20
Roosters, ₩ lb	— @ —	6 @ 9
GROUSE, ₩ pair	40 @ 90	40 @ 1 25
PARTRIDGE, ₩ pair	40 @ 70	40 @ 1 25
DUCKS, Wild, ₩ pair	50 @ 1 50	40 @ 2 75
QUAIL, trapped, ₩ dozen	75 @ 2 25	1 00 @ 3 25
HARES, ₩ pair	20 @ 30	20 @ 35
RABBITS, ₩ pair	20 @ 30	25 @ 40
VENSION, ₩ lb	7 @ 16	— @ —
TURNIPS ₩ bbl	75 @ 1 00	75 @ 1 00
CARROTS, ₩ bbl	— @ —	1 00 @ 1 25
BEETS, ₩ bbl	— @ —	1 00 @ 1 25
CABBAGES—₩ 100	3 00 @ 7 00	3 00 @ 6 00
ONIONS—₩ bbl	1 25 @ 3 25	1 00 @ 3 00
POTATOES—₩ bbl	75 @ 1 75	75 @ 1 75
SWEET POTATOES—₩ bbl	1 00 @ 2 75	1 50 @ 3 25
BROOM-CORN	4 @ 11	3 @ 11
PEARS, per box	4 00 @ 6 00	4 00 @ 4 50
GRAPES, ₩ lb	2 @ 8	3 @ 9
APPLES—₩ barrel	1 75 @ 3 25	1 50 @ 3 25
CRANBERRIES—₩ bbl	7 60 @10 25	8 50 @12 50
SQUASH, ₩ bbl	50 @ 1 25	75 @ 1 25
CAULIFLOWER, per bbl	1 50 @10 00	— @ —
ORANGES, Florida, ₩ bbl	— @ —	6 50 @12 00

New York Live-Stock Markets.

Beeves.—The course of the market for the past month has been downward. The causes for the decline have been chiefly the large arrivals of dressed beef from Colorado and Chicago, which have been sold from 4 cents per pound for forequarters up to 7@8 cents for sides, the large arrivals and the receipt of a lot of poor distillery cattle from the Chicago "crooked whiskey" manufactories, which have been seized by the government. The mild weather has had its effect, and also the poor condition of stock arriving. Few first-class beeves have come to hand. At the close the lessened receipts helped to improve prices a fraction on good stock. Poor cattle remaining dull and low, and selling at 3¾c.@4c. per lb. live weight for bulls; 9½c.@10c. per lb. for native steers to dress 55 lbs., and 12½ for prime cattle dressing 56 to 57 lbs. per gross cwt.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Jan. 17	7,545	112	1,080	31,275	29,668	69,680
Jan. 24	9,014	91	750	25,976	29,073	64,904
Jan. 31	9,248	132	1,050	23,564	23,095	57,087
Feb. 7	8,921	96	655	29,894	21,661	61,187
Feb. 14	6,539	93	761	20,583	23,187	51,163
Total for 5 Weeks	41,267	524	4,296	131,310	126,684	304,021
do. *for prev. 4 Weeks*	27,485	269	3,189	76,342	85,973	193,258
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	
Average per Week	8,253	105	859	26,262	25,337	
do. do. *last Month*	6,871	67	797	19,085	21,498	
do. do. *prev's Month*	8,891	93	1,114	23,710	32,367	

The prices for the past five weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Jan. 17	8¾@13½c.	10 @12 c.	11 c.
Jan. 24	7½@13½c.	9½@12 c.	10¾c.
Jan. 31	7½@13½c.	9½@11½c.	10½c.
Feb. 7	7½@13½c.	9 @11 c.	10 c.
Feb. 14	8½@13 c.	9½@11 c.	10¼c.

Milch Cows.—The demand for cows has been steady, and prices have improved, notwithstanding an unfavorable market for milk and for beef cows. At the close, stock worked off heavily and prices fell off. Selected cows sold for $75@$80 per head. Good cows brought $70 and poor $50@$60....**Calves.**—Good veals have been scarce and high, selling readily at 10½@11 cents per pound through the month. Fair to good veals have been in better supply and slower demand. The market closes fairly at 7c.@9c. per lb. live weight for common veals, and $10@$13 per head for grass calves....**Sheep and Lambs.**—In spite of large receipts this class of stock has sold freely at advanced prices until near the close, when the decline was fully ½c. per lb. Fine sheep which sold at 8½c. per lb. two weeks ago, sold at the close at 7¾; fair to prime at 6½c.@7c. per lb., and poor went at 5c.@5½c. per lb. live weight....**Swine.**—The market for hogs has been weak and strong alternately. Dressed hogs were weak as we close, selling ¼ below last week's prices at 8½c.@9½c. for western, and 10½c. for city. The last sale of live hogs was at 8½c. per lb.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	22.00@ 24.00
Ground Feed, per ton	22.00@ 24.00
Linseed-oil-cake, western, per ton	45.00@ 46.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

Peruvian Guano (10 per ct. ammonia), per ton	$54.00@$56.50
" " (Rectified), per ton	61.50
Mapes' Superphosphate (mineral), per ton	30.00@ 35.00
" Bone Superphosphate, per ton	40.00@ 45.00
" Prepared Fish Guano, per ton	40.00@ 45.00
Fish Guano (crude in barrels), per ton	24.00
Bone Black, per ton	25.00@ 28.00
Bone Flour, per ton	40.00@ 45.00
Rawbones Ground (pure), per ton	33.00@ 40.00
Rough Bones, per ton	22.00@ 25.00
German Potash Salts, (25@35 per cent), per ton	20.00@ 25.00
Gypsum, Nova Scotia, ground, per ton	8.00@ 9.00
" In barrels, per bbl	1.25
Wood Ashes, per bushel	16 c.@18 c.
Nitrate of Potash (95 per cent.), per lb	8½c.@ 9 c.
Chloride of Potassium, (muriate of potash), lb	3¾c.
Nitrate of Soda, per lb	3¾c.@ 4 c.
Sulphate of Ammonia (25 per cent.), per lb	4¾c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia	3 c.@ 4 c.

MARCH

Is a Good Month in which to Secure one of

The Valuable Premiums.

We have the testimony of very many of the thousands who have taken our Premiums in past years, that they have been greatly surprised at the case with which the work has been done. Every reader of our paper, who desires to do so, can obtain a sufficient number of subscribers to secure one or more of these Premiums, which average in value from 75 cents to $650.00. Among the articles offered, are: **Gold Pens and Pencils—Watches—Fine Table Cutlery—Elegant Silver-plated Articles—Scissors in Cases—Pocket Knives—Boy's Wagons—Children's Carriages—Floral Sets—Microscopes—Melodeons—Pianos—Guns—Rifles—Books, etc. etc.** Look over the List, if you have received one, and if not, send for our **Illustrated Premium List,** and see how much you can get for a little well directed effort.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Fredcrick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

Peach Culture at Madison, Ind.—The utility of an article is by no means confined to the instruction it may contain, but the matters it suggests or calls out, are often of more value than the article itself. In November last we published an article which gave some reasons for the unprofitableness of last year's eastern peach crop. This is used by Mr. Argus Dean, as a basis for a series of three longer articles in the Madison, Ind., Evening Courier. Mr. D. very judiciously points out such parts of our article as do not apply to peach culture in Indiana, and treats the whole with so much intelligence, that we regret that we can not give a place to his remarks. Madison is an important peach center, and Mr. Dean is one of its principal growers.

"At as Great a Length as Possible," is the way a reader who asks a question wishes us to reply. There are many persons who mistake quantity for quality, and estimate the value of an article by its length. In this busy world we try to get information into as short a space as possible, and do not use two lines if the story can as well be told in one. Our correspondent should take an English journal, in which the writers rarely take anything for granted, but on the simplest subject go back to the time of William the Conqueror—if not to that of the Creation.

Our Fowls and Other Things.—Whenever we publish an engraving of fowls, or poultry of any kind, we get letters actually by scores, asking the price of such birds, and we also have numerous requests to send a catalogue of "your fowls." This is not confined to poultry, though for a few weeks the letters have been more numerous in relation to these, but it is the same thing with cattle and all kinds of animals, as well as with fruits, flowers, plants, and vegetables. We are led to infer two things. *First,* that the owners of poultry (and other things) are very remiss

in advertising, or people would know where to apply. The letters we have had about these during the last two months, would, if followed by purchases, make a good business for any poultry dealer. *Secondly*, people do not generally understand that we illustrate and talk about such things, because we think it will benefit our readers to know of them, and that neither publishers nor editors have for sale, or have in any way the slightest interest in the sale of any bird, beast, or other thing that is noticed in our columns, except it be books, and Crandall's Blocks, etc., for children, which are specially advertised.

The Way of Bulbs.—"F. O. W.," Mass., asks if after Tulips, Hyacinths, etc., have bloomed, they form new bulbs. Yes. If the bulbs have been forced by blooming in the house in water, they are too much exhausted to be of use. If they were in pots of earth, then, when the ground is open, the bulbs may be turned out and left to themselves, and in a year or two they will give fair flowers, but never so good as at first. If you take up a tulip bulb, planted last fall in the open ground, after the leaves have faded, you will find it like the one you planted, but it is a new bulb that replaced the old one.

A New Cucumber, Tailby's Hybrid.—It is not our custom to say much about new varieties of vegetables until we have tried them. Our previous experience has been that when Mr. J. J. H. Gregory, of Marblehead, Mass., says that he has tried a squash, and pronounces it good, we on trial are able to

say ditto. As the cucumber belongs to the same family with the squash, we are disposed to accept his judgment as to Tailby's Hybrid, and when he says "it is unsurpassed by any and equalled by few," and that it unites the good qualities of the English sorts with the hardiness of our American varieties, we are sure it is worth trying.

Heating our Buildings.—Our friend J. M. Jordan, the well known horticulturist of St. Louis, Mo., is quite convinced that our buildings will ultimately be heated by hot water pipes, and wishes us to urge upon manufacturers of such apparatus, to make a full display of them at the Centennial. We are sure that here is a fine field for inventors, and when we consider the great improvements made of late years in heating greenhouses, we have hopes that a cheap plan may be found for warming dwellings in a similar manner.

Black-Leg in Calves.—"C. M.," Algona, Iowa. The best fed calves are the most subject to "black-leg" or black-quarter, (carbuncular erysipelas). They are most subject to it in the warm damp weather of early spring, and a mild winter is greatly provocative of diseases of this kind. Their is little danger if the calves are kept from abundant green food until they are gradually used to it, and are occasionally physicked as spring approaches with a dose of salts (4 ounces), with an ounce of ginger in it. A regular supply of salt should be given to them. Fair, moderate feeding is better than an excess for young animals, and some linseed is a valuable addition to their feed.

Heavy Essex Pigs.—"E. N.," Batavia, Ill., sends the weight of an Essex pig, 27 months old, that weighed alive 630 lbs., and dressed 536 lbs., also of two others about 17 months old, weighing 575 and 520 lbs.

Do Lice Produce Fleas?—"C.," Bowling Green, Ky., asks this question. We think a very little reflection would have been sufficient to enable our correspondent to decide this matter for himself. Lice are very different insects from fleas, both in their form and habits, and each kind reproduces itself. The fact that fleas are found in the bedding of hog pens, and not upon the hogs, while they are found upon dogs, cats, and poultry, is explained by the habit of the fleas to hide beneath some dense covering, and the thin coat of the hog does not furnish sufficient shelter for them, they therefore gather anywhere except upon that animal.

When to Set a Saw.—"J. H., jr.," New Orleans. It is usual to file the saw first, and set it afterwards, although some sawyers and mechanics do the reverse. It matters very little which is followed.

Binding Grain with Wire.—"M. N.," Annapolis, Ill. This practice will scarcely ever become popular, on account of the danger from the use of the bands. Already a cow that was sold for $25,000, has been lost through swallowing a piece of a wire band from a bale of hay, and doubtless many less valuable animals would be lost, were the use of wire bands to become prevalent. They are also dangerous in the thrashing machine. Twine would be perfectly safe, and no doubt that inventors will contrive to substitute it for wire.

Flowers in Church.—While some denominations have long decorated their churches with flowers on Easter and other days, others have rigidly excluded them at all times. The custom in this respect has greatly changed within the last 20, or even 10 years, and now there are few churches in which flowers are not to be found on especial Sundays, and in some they are present every Sabbath. We need not argue the appropriateness of this kind of decoration, for its general adoption is evidence of that, and some churches go to a great expense to provide it. To our taste expensive and elaborate decorations are less pleasing than more simple ones. As an example of what may be done by one woman, who has her heart in the matter, we may cite that of the Methodist E. Church, at Middletown, Conn., where, year after year, summer or winter, and regardless of the weather, the eyes of the worshippers have been greeted each Sabbath morning by a display of flowers in some form. Sometimes a vase loosely filled; on other occasions a cross of green, studded with flowers, each week presenting some new and pleasing change, and the kinds varying with the season; ferns and wild flowers at times are freely used; the great variety presented, is as pleasing as the regularity and constancy with which these offerings are contributed. There is no expense attending this beautiful decoration, it being done entirely by one lady, who, though living at a distance from the church, never fails to present each Sabbath morning, these flowers of *her own raising* and arranging. It is with Miss Ellen Rockwell entirely a labor of love, and she is amply repaid for her trouble and care, by knowing the pleasure she gives others by reminding them of the land where "everlasting spring abides, and never withering flowers."

Gold Hunting.—"O. R.," Gibson, Pa. Gold mining is an attractive but a delusive occupation. More money has been spent in procuring our supply of gold than has been gained by it. A large amount of capital is needed to open a gold mine, and those who work in the mine, have a hard and dangerous labor to perform for comparatively poor wages. Maps and descriptions of lands in the Arkansas valley can be had on application to the Land Commissioner of the A. T. and Santa Fe R. R., Topeka, Kansas.

Size of Poultry House.—"H. A. M.," Hudson, N. H. For 200 fowls, the roosting house should be 24 feet long, and 12 feet wide; the sitting house should be 16x12. For laying places, there should be several retired, small houses, or low sheds, plentifully furnished with boxes, and cut chaff. These are better than one stated house, as hens like a frequent change of base, and would rather steal a nest than have one given to them. It is better to humor than to thwart their peculiarities.

As to North Carolina.—Several correspondents are informed that the address of "T. B. W.," whose communication appeared a short time ago in the *American Agriculturist*, is T. B. White, Horse Cove, Macon Co., N. C. This is a new settlement of eastern men in that locality, in which the lands are good, the climate mild, and fruit, especially apples, flourishes well. Mr. S. T. Kelsey, formerly a prominent fruit grower of Emporia, Kansas, is planting largely of apples.

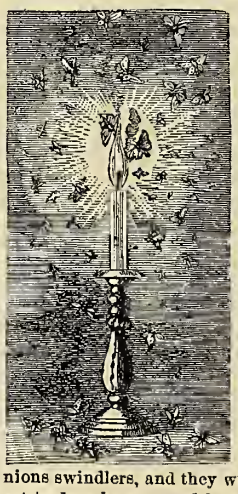
Pure Spices.—The general adulteration of spices was mentioned in our columns some months ago, and the item catching the eye of C. E. Andrews & Co., Milwaukie, they sent us a box of their Crocker Mills spices, to show that *all* spices were not adulterated. These have been found upon trial to be satisfactory, and we doubt not they are, as claimed, "Absolutely Pure."

Cure for "Sprung Knees."—"J. M. W.," North Beach, Minn. The only cure for sprung knees is rest; frequent rubbing with a stimulating liniment of creosote and turpentine, one part each, and olive oil, two parts, mix and rub on to the back of the joint, and bandaging will promote a cure.

How to Improve a Piece of Land.—"J. R. D.," New Albany, Ind. Green manuring is an easy method of improving land that has still enough strength left to produce a green crop. To commence, the land might be sown with buckwheat in May next, having been plowed rather deeply early in spring. This may be plowed down in July, and the ground again sown with buckwheat. A few crops grown in this manner would prepare the ground for clover, and if a fair crop of clover can be grown, it can be readily improved after that by taking a few crops of hay, and plowing in the second growth. Perhaps some plaster or lime may be needed to help.....The "pod" sent can not be identified, without a description of the plant it came from. It looks like the fruit of the horse-nettle, *Solanum Carolinense*, which is worse than the very disreputable Canada thistle to get rid of.

Soaking Clover Seed.—"D. N. K.," Lehigh Co., Pa. It would not be advisable to soak clover seed before sowing it. If the weather should be dry or cold afterward, the sprouted seed would be killed. There is no need of soaking, as the seed sprouts very readily. The easiest way of sowing is to do so upon the last snow of spring; every seed can readily be seen upon the snow, and it can be sown very evenly. It soon sinks through the snow, and into the fine cracks of the soil, and when the warm weather arrives, it is in the best position for growing. Upon hill-sides, or land that is liable to be washed by rains, this plan will not be safe.

Sundry Humbugs.



As yet we are unable to say what is to be the leading style of humbug for the present year; for as we have before remarked, there are fashions in humbugs as in other things. At one season gift distributions predominate; again, the pretended counterfeit money men are most numerous, though of late very scarce; again, quack medicines, always abundant enough, seem to overshadow all others; and so on. It can hardly be possible that the advantages offered by the Centennial year, when there will be much travel, and liberal spending of money, will be overlooked by the ingenious swindlers, and they will no doubt, as well as honest traders, be prepared for a harvest; but their plans are not yet developed. We awhile ago thought that bogus Wall street operations were to be the marked feature in this year's humbugs, but they have fallen off wonderfully. The prompt warnings we have given (in this case seconded by the daily journals), the action of the postal authority in showing that many of the Wall street "put and call" men were the very same as those formerly active in the sawdust swindle and counterfeit money business, and the introduction of a bill into the legislature to prevent this form of gambling, have all had their effect in deterring these chaps; fewer of them advertise than formerly, and these are much less bold than at first, and resort to subterfuges. There is no stronger illustration of the power of an inordinate love of gain than the fact that there can be found persons all over the country who will believe the stories of the wonderful profits made on Wall street, and will trust their money to perfect strangers to use in a kind of gambling, which, if followed in good faith, is exceedingly hazardous, and much more likely to lose than win.

"IS THIS A HUMBUG?"

is the question that meets our eye many times every month. Circulars, pamphlets, and advertisements cut from papers are sent to us in large numbers; on many of these is the comment, "Here is another humbug, show it up;" but with many others we find an inquiry which may be condensed into, "Is this a humbug?" In such matters there is a very safe rule. If a scheme or proposition of any kind presents itself in such a manner that you feel little confidence in it, and are obliged to ask some one else if it is not a humbug, you may be very sure that is a thing to be let alone. Here is an advertisement of a "Stationery Package and Jewelry Casket," each "casket" containing one or two "valuable pieces of Jewelry." The package sells for 25 cents. A correspondent sends the advertisement, and wishes us to state

"WHAT WE THINK OF IT."

See here, friend Risler, let us take a common sense view of the thing. Suppose you were to go into this "package" business, what would be your object? "To make money, of course," you will say. If your packages are to sell for 25 cents each, what would be the cost of the things you put into them?—"Well, 18 or 20 cents."—But that would not leave you profit enough to pay for these large advertisements.—"Then make them cost 5 or 10 cents."—Exactly, and that is just what these fellows do. You, and every other sensible man, should know that these schemes are carried on to *make money*, and this can only be done by putting into the package things which cost less than the package sells for.—Now and then some of the concerns may, as an advertisement, put in a thing that costs more, so that it may be talked about, but as a

whole, the lot of paper, envelopes, pens, pen-holders, pencils, blotting pads, *and* "valuable pieces of jewelry," do not cost the seller of the package anything like the 25 cents asked for it.

WE CAN OFFER NO HELP FOR IDIOTS.

Some strange cases are presented to us. Here is one. A couple of well-dressed men drive up to the house of a well-to-do young farmer. The strangers are plausible and pleasant; they have to sell the right of a new fanning mill for that county for $1,400. Mr. ——, a well-known farmer in the county, has bought the right for half the county for $700. Well-to-do young farmer knows Mr. ——, would be glad to be associated with him, and the W. T. D. Y. farmer planks down his $700 in cash for the other half of the right. The two well-dressed young men stopped at the next town overnight, and have not been heard of since. All that the victim knows of them is that they were well-dressed, and one of them was named Smith. We are asked if we "have ever heard of them."—"Heard of them!" bless your innocent heart we know these fellows "like a book." They are not always selling fanning mill rights; they keep brokers offices on Wall street; they have real estate offices on other streets; they run lotteries in Texas and Wyoming; they offer counterfeit money in New York; they keep matrimonial offices in Chicago; they run quack medicine shops in Buffalo and other cities; they sell bogus jewelry in Maine. It is just "Mons. Tonson come again," this same old humbug we have known and fought these many years. This well-to-do young farmer has paid $700 for a lesson that he might have had for much less. He does not write us himself, but his neighbor does, and we advise that neighbor, if he does not think the young man sufficiently cured by this operation, to have him put under a guardian. He certainly is not to be trusted with his own property....The readiness with which farmers are caught by such swindlers has been a matter of surprise to us, and we can only account for it by the fact that their isolation keeps them from the knowledge of the wicked ways of wicked men. In their own honesty of purpose and uprightness of dealing, they cannot conceive that a "well-dressed" man, especially one "named Smith," can be less honest than themselves. If farmers could become more social, either through farmers clubs, granges, or other means where they could come together frequently, and know each other well enough to take counsel of one another, they would be less open to fraud.

EYE CUPS AND EAR DRUMS.

We receive complaints from those who have invested money in these appliances, and find them not only of no use, but hurtful, and letters from others who ask our opinion of them. We have but one answer to those who propose to tamper with their own eyes or ears with *any appliances whatever*, and that is "DON'T." How many of those who write us about these things understand the structure of the eye or the ear? These organs are subject to various derangements, and in some cases it is beyond all human power to help them—yet persons are willing to try a mechanical affair, and one which may be really injurious, for an imperfection of the sight or hearing, without first finding out the cause. This recklessness in meddling with these organs, upon which the comfort of life so much depends, is something astonishing. The very same persons who would try these upon their eyes and ears, would not think of repairing their own mowing machine, sewing machine, their kitchen-clock, or even their coffee-mill. Let everything of this kind alone; if eye or ear is at fault, go to a known physician and find out what is the matter. If there is no competent one at hand, go where there is one, but as you value eye or ear, do not tinker with it yourself.

MOREOVER—ONCE MORE—PLEASE NOTICE.

We almost every day receive letters asking about persons living in New York, and who advertise themselves in far off papers as physicians possessing a wonderful ability to cure some particular thing. We know nothing of such persons, and the very fact that they advertise in this manner shows that we do not want to know about them. Have nothing to do with any one who advertises his cures. Our western friends need not think that they alone are cursed with quacks; they abound all through the east, especially in New England, and the wealthy city of Providence, R. I., is their very "Bonanza," a perfect harvest field for all "Blood Doctors," "Clairvoyants," and the whole tribe. A chap calling himself "Dr. Willard, of Boston," has been making a tour of some of the Connecticut towns, from one of which a prominent citizen writes: "He operates by obtaining in advance the address of diseased persons on his route (paralysis and eye diseases a specialty), then representing the call made upon such persons as by request of the local physician, whose name has likewise been previously obtained, he proceeds, if confidence has been secured, to apply to different parts of the body of the patient, coils of simple copper and zinc wires, guaranteeing in all cases a perfect cure. For this service, the charge, *cash down*, is varied, according to ability and credulity of the victim, $15 to $25 being, perhaps, the more common amount. A warrant for his arrest was issued here, but he succeeded in eluding the reach of the officers."

One Way to Save Money.—Do not put postage stamps upon letters to us that are not of sufficient importance to *sign*. It takes all the time that we can possibly command to attend to letters properly signed—those that the writer considers not worth putting his name to, are of no consequence to us, and are as if they had not been written.

One of the little Conveniences.—Some grumbling John Bull once wrote a book called the "Little Miseries of Life," or some such title, in which he had his growl over everything from a missing shirt-button to a creaking door. A book on the comforts of life would be much pleasanter, and were we to write such, we should enumerate among the little conveniences, Mr. J. S. Birch's watch key, which adjusts itself to any watch, and is as handy as can be. In traveling, we have often had occasion to lend it, and never found a watch it would not fit—besides this it is as neat as it is useful.

Stock-keeping on the Plains.—"Subscriber." In a conversation recently with a person engaged in stock-keeping in Wyoming Territory, we were informed that there are very few facilities for young men there who wish to learn the business, unless they have sufficient capital to procure an interest in a herd. Every person there is busy enough in looking after his own interests, and none but experienced help is needed. There are always openings for men with capital to join others in the business, but to commence with less than $10,000 to $20,000, is simply to get in the way of the larger stock men who occupy the ranges.

Scribner's Horticulture.—It has now become the custom for literary journals to give their readers instructions in horticultural matters, and we know of no more amusing reading than the horticultural columns of some weekly and monthly periodicals we could name. The number of persons who know about garden matters, is large, and the number of those who write on such topics, is large also; but the number of those who both know, and are able to write what they know, is surprisingly small. When we took up our advance sheets of the March Scribner's Monthly, and saw the heading "Rural Topics," it was with the thought of "one more unfortunate, rashly importunate,"—but on reading on, we were surprised to find it sense, and when we came to "P. T. Q.," at the bottom, we saw it all. Scribner has had the fortune to capture our friend P. T. Quinn, and make him tell what he knows on rural matters. Here is one magazine at least, out of whose horticultural column we shall not get a bit of fun, but only sound and well considered teaching.

Cincinnati Chamber of Commerce.—Sidney D. Maxwell, Esq., Superintendent of the Cincinnati Chamber of Commerce, favors us with a copy of the 27th Annual Report, being for the year ending August 31st, 1875. This report is filled with a mass of valuable information, regarding the trade of Cincinnati, and statistics of the production of and business in pork, grain, and other produce for the past year, to which we have not space at this time to refer more fully.

The Next Peach Crop.—The peach-growers last year had a disastrous season. In an article published last fall, we showed that one cause of their failure was filling the market with fruit which would at any time be regarded as poor, and which, in a season of abundance, did not pay the freight, but brought the shipper in debt. We are glad to learn from the Maryland and Delaware papers, that the lesson has not been lost upon the peach-growers, some of whom are grubbing up their trees of inferior varieties, and have come to the sensible conclusion to keep all inferior fruit at home. This is right. Good fruit will always bring paying prices; but a large share of the baskets and crates sent last year, were filled with stuff unworthy the name of fruit.

History of the Booth Short-horns.—The publishers of the Farmer's Home Journal, of Louisville, Ky., favor us with a copy of the History of the Rise and Progress of the Booth Herds of Short-horn Cattle, by Wm. Carr, which they have reprinted from the London edition of 1867. This little volume should be in the hands of every breeder and farmer in the country.

Swill for Hogs.—"A. D. F. F.," Washington, D. C. The swill from a hotel, which consists mainly of refuse food, is very good feed for hogs. It would be improved by the addition of 20 pounds of bran and corn meal mixed, to every barrel of it.

Something To Think of....and To Do.

Here are a few random extracts from letters sent by the **16,000** persons who have felt themselves so well paid for the time they have given to securing subscribers for the *American Agriculturist*. A hundred pages of this paper would not contain all the good things that would be freely said by the happy recipients of our Premium Articles. You, reader, and thousands of others, may yet this year get some of these Premiums. Send to the Publishers for an Illustrated List of Premiums, if you have not already received it.

A Widow Lady greatly desired a good PIANO, but was unable to buy one. Seeing the offer of the Publishers of the *American Agriculturist*, she started out one April morning among her friends first, with her copy of the paper, and before returning at night she had a dozen subscribers. She followed this up on other days, making three temporary visits to friends in other towns, and before May closed, she had forwarded subscribers enough to obtain, *free*, and had received one of Steinway & Sons' splendid **$650** Pianos. It cost her nothing but the freight.—Many others have secured similar results. Hundreds, yes, thousands of others may do the same this year. There are millions of people who would be benefited by having the paper urged upon them.

A Postmaster writes: "....My splendid Premium Tea Set far exceeds my expectations....It really cost me nothing, as I got these subscribers by showing it to callers, and they are all pleased with the *American Agriculturist*. I suppose the publishers are pleased, so we are pleased all round...."

A Missouri Subscriber writes: "....My Premium Gun arrived 'safe and sound,' is just what you represented it to be, and I am *well* paid for my trouble in securing the necessary subscribers to obtain it...."

A Missouri Subscriber writes: "The Premium Tea Set is received... It is a beauty—abundant pay for getting the subscribers....I am going right on to get another Premium...."

An Ohio Subscriber writes: "....Many thanks for the excellent Premium Watch....After trying it as a time-keeper, I can truly say it is 'Good pay for Little Work,' and that getting subscribers for the *American Agriculturist* is time well spent...."

A Pennsylvania Subscriber writes: "....The Premium Microscope came yesterday, and I am already delighted with it. The Premium Watch you sent me two years ago is a splendid time-keeper."

A "Missourian" writes: "....The Premium Multum-in-Parvo Knife is received. I have tested its metal, and find it extra good—and the combination of useful things is a *perfect success*.—I once gave $6.50 cash for a knife similar to this one, but without the screw-driver or gimlet. It was one of Rogers & Son's, not as convenient and no better metal than yours," (which is only $3.50, and which he got *free* for a very little time in collecting eight subscribers.)

Coloma, Ill., Bonds—NOTICE.—All holders of the Bonds issued by the Township of Coloma, Whiteside County, Illinois, are requested to promptly communicate with the undersigned, to the end of securing co-operation in obtaining their just rights. They are advised to give no heed to the efforts made by official or other persons to induce them to sacrifice their interests. The undersigned is intrusted with some of these bonds by a widow and orphans, and proposes to secure their just dues. Full particulars concerning the issuing of these bonds, and of the *individuals* opposing their payment, etc., will appear in due time; until which time farther comment is reserved. ORANGE JUDD, 245 Broadway, New York.

Roots for Pigs.—"G. A. H.," Thompson, Conn. Potatoes or sugar beets are the best roots for swine; the first have 15 to 20 per cent of starch; the second have 8 to 12 per cent of sugar, and both these substances are very valuable for making fat. The potatoes will be more digestible when cooked. A good root-cutter is made by Warren Gale, Chicopee Falls.

Basket Items continued on page 113.

Science Applied to Farming.—XV.

BY PROF. W. O. ATWATER, DIRECTOR OF CONNECTICUT AGRICULTURAL EXPERIMENT STATION, WESLEYAN UNIVERSITY, *Middletown, Conn.*

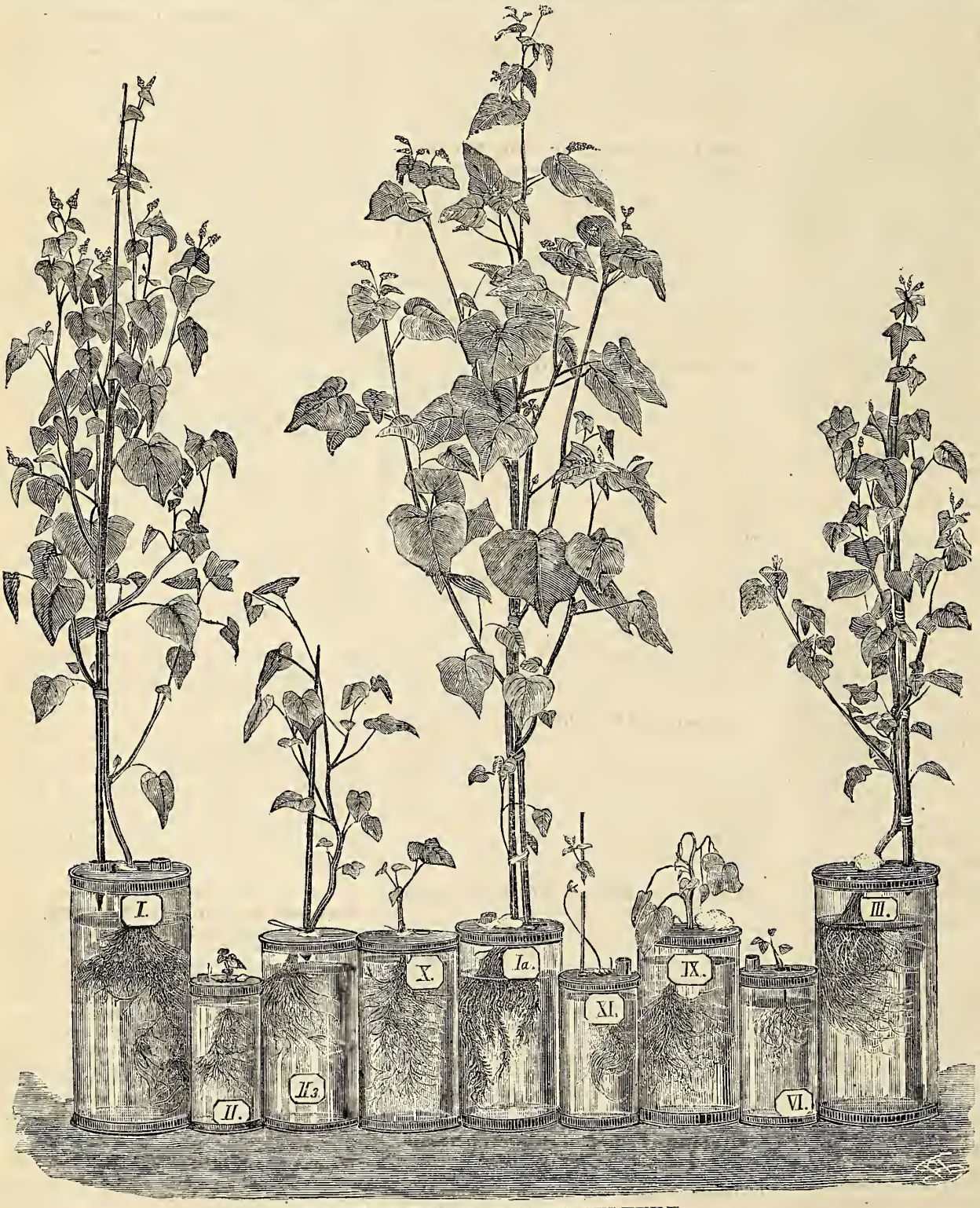
Interesting and Important Experiments on Plant Growth—Essential Ingredients of Plant Food—Potash and Starch—Practical Conclusions—Fertilizers.

The accompanying Illustration is engraved from a photograph of one of a series of experiments performed by Dr. NOBBE and his assistants at the Agricultural Experiment Station at Tharandt in Saxony. They belong to a large number of similar researches, which have been carried on in order to discover what materials are *required* as food by plants, and how the plants use them....Until quite recently no one knew what constitutes the real food of plants, how much of the material of the plant came from the air and how much from the soil, what was needed for fertilizing crops, nor how the required materials could be best obtained in manures. But years of patient work by many investigators in the chemical analysis of plants, soils, and manures, and in the culture of plants in the greenhouse, and of crops in the field, have thrown a vast flood of light upon these dark problems. This work has been done, in large part, in the Agricultural Experiment Stations, and has given us definite knowledge of incalculable value....In order to a full understanding of some of the more important results of these investigations, let me recall to those who are not well versed in the science, a few

Important Facts in Chemistry.

Phosphoric acid combined with lime, as *phosphate of lime*, makes up most of the mineral matter of all bones.—*Sulphuric acid*, (oil of vitriol), with lime, forms *sulphate of lime*, otherwise known as "plaster," or gypsum.—*Silica* is the chief ingredient of ordinary sand. It occurs nearly pure in flint and quartz, and, combined with other substances, in many minerals.—*Nitrogen* constitutes four-fifths of the air, the other fifth being oxygen; and nitrogen also makes up about seven-eighths of *ammonia*, the rest being hydrogen.—Charcoal and lampblack are nearly pure *carbon*.—By *potash* is to be understood the compound of *potassium* and oxygen, and by soda, sodium and oxygen.—Bearing these facts in mind, let me quote the following tersely expressed statement by Prof. S. W. Johnson, of some of the substantial results referred to:

"In respect to the food of plants, it has been settled that *potash, lime, magnesia, iron, phosphoric acid*, and *sulphuric acid* MUST be furnished to all agricultural plants through their roots and by the soil, in order to their growth. It has also been shown that soda, silica, and chlorine are not needful for the early growth of grain crops, but that chlorine is essential for the perfection of the seed, and that silica is probably necessary to uniform blossoming and ripening. It is further proved that water must enter crops through their roots; that carbon, which constitutes more than half their weight, is superabundantly furnished by the air; that air and water together yield the materials out of which fully 90 to 98 per cent of crops is built up; and that the soil has to give for their nourishment only the 2 to 8 per cent of mineral matters which remain as ashes when they are burned, and the one and a half to two per cent of nitrogen which they also contain."



EXPERIMENT IN WATER-CULTURE.

BY DR. NOBBE, AND ASSISTANTS, AT THE AGRICULTURAL EXPERIMENT STATION IN THARANDT, SAXONY.

The above engraving we copy from photographs of Buckwheat Plants, grown with the roots immersed in jars containing various solutions of the ingredients of plant-food in water. The plants were supported by perforated corks resting on the covers of the jars, and by upright sticks. In jars I and Ia was a NORMAL SOLUTION, *that is, a solution containing all the essential ingredients of plant-food, including potassium as chloride. The plant in Ia was nearly 3½ feet high. The solution in II was the same as normal solution in I and Ia, except that potassium was omitted in the jar II. The plant was scarcely 3 inches high. The jar II₃ commenced as II, that is without potassium, but potassium chloride was afterwards added. VI contained the normal solution, except that sodium was substituted for potassium. IX, X, XI, and III, same as I, except that IX contained no lime, X no chlorine, and XI no nitrogen, and III had nitrate instead of chloride of potassium.*

Essential Ingredients of Plant-food.

In order, then, that any agricultural plant may grow, it *must* have at its disposal, in the soil, besides water, a

certain list of substances, viz.: potash, lime, magnesia, iron, phosphoric acid, sulphuric acid, and some compound of nitrogen. Besides these, chlorine, certainly, and silica, probably, are necessary in many, if not all cases, for the perfection of the plant. If any one of these substances be lacking, the plant will not thrive. With an abundant supply of all, and other conditions favorable, its growth will be luxuriant.

How has all this been learned?

In the first place, in every analysis that chemists make of any plants, be it corn, or grass, or turnips, be it in New England or in Old England—and thousands of these analyses have been made—each one of these substances has always been found. It is fair to suppose, then, that, being always present, they have each a work to do in the plant. Still, this is not positive proof. As every ordinary soil contains all of these substances, is it not possible that the plants may take up some of them in the water it absorbs from the soil, just as a towel, one end of which has fallen into a dish of water, will absorb the water and whatever it holds in solution? This question might be tested by growing plants in soils with one of these substances absent from it, potash for example. But it is difficult to find a soil entirely free from potash. It is easy, however, to dissolve in pure water any or all of these substances, in any desired proportion, and it is well known that plants will grow with their roots in water. In view of these facts, the German chemist, KNOP, some years ago conceived the idea of

Experiments in "Water-Culture."

This consists in raising plants without any soil at all, but with their roots immersed in water, in which are dissolved the soil-ingredients of plant-food. Seeds are germinated, or "sprouted" in pure sand or moist cotton.—At the same time, the ingredients of plant-food, which are to be supplied to the plants, are dissolved in water in the desired proportions, and these solutions put into glass jars. At the tops of these the just germinated plants are placed, properly supported, with their roots dipping into the solutions, and thus allowed to grow.... Nearly all of the experiments of this class have been made by German chemists, prominent among whom have been KNOP, SACHS, NOBBE, STOHMANN, KUEHN, and WOLFF....Solutions containing all the soil-ingredients or plant food are called "*Normal Solutions.*" In these, plants are raised as large, as healthy, and in every way as perfect as those grown in the soil. Wolff raised in such a solution four perfect oat plants with 46 stems, and 1,535 well developed seeds. Nobbe obtained a Japanese Buckwheat plant, 9 feet high, weighing, air-dry, 4,786 fold the weight of the seed, and bearing 796 ripe, and 108 imperfect seeds. And Knop used to delight in showing his friends a young oak tree, very small indeed, but the growth of which had been normal, though its roots had been immersed only in watery solutions....The above were obtained in the "normal solutions." What would result if one of the necessary food ingredients were omitted? This is answered in

Dr. Nobbe's Experiment.

The Engraving with the explanations shows that in the normal solution the buckwheat was vigorous and healthy, and grew to be nearly 3½ feet high. Another plant (II), grown under precisely the same circumstances, except that no potash was supplied, led a starving and sickly life, and attained a hight of scarcely 3 inches. Without potash no full development was possible. When this was added later (in II_3), the plant revived, pushed out with some vigor, but was unable to overtake its better-fed neighbors. Nor did the plants grow well in lack of either lime (IX), or chlorine (X), or nitrogen (XI)....These are the results, not of single, but of many repeated trials. Dr. Nobbe made in this case, a number of different series of experiments, each corresponding to the numbers I, II, etc. There were, for instance, several of series I, some larger, and others smaller. From these, I and I*a* were selected as of average size and development. So II, III, etc., were each selected as fair average samples of the plants of those series. The selected plants were photographed, as shown in the picture.....Many such series of experiments have been carried on with various plants by Nobbe and numerous other investigators, and they all agree in this

One General Conclusion:

No agricultural plant can attain full growth without a sufficient supply through its roots from the soil of: *Potash, Lime, Magnesia, Iron, Phosphoric Acid, Sulphuric Acid*, and some compound of *Nitrogen.* Besides these, Chlorine, and perhaps Silica, are sometimes, if not always, indispensable to complete development. If any one of these *essential ingredients* be lacking, the plant will suffer in growth and development....To settle all these points, was not, however,

The Real Object of Dr. Nobbe's Experiments.

For this much was well-known before. He desired to go farther and learn what was the use, the *function*, of each essential ingredient in the plant, and the form in which it would best do its work. In this series he tested potassium, proposing to himself three questions. I give the first in his own words, translated from the German:

"*How will the plant comport itself in a solution containing all the ingredients essential to its growth except potash, and what will be the explanation of the peculiar phenomena that may be manifested?*"

Now for the answer. If we examine a green leaf with a microscope, we may find in it thousands of minute sacs, or *cells*, as they are called. Some of these contain a green substance called *chlorophyll*, (from two Greek words signifying green and leaf), which gives the leaf its green color. Inside these grains of chlorophyll appear still smaller grains of starch. Starch is composed of the elements carbon, oxygen, and hydrogen. It is produced inside the leaves, which have the power of taking carbon from the carbonic acid (a gas consisting of carbon and oxygen), in the air, and uniting it with hydrogen and oxygen of water to form starch and other similar compounds. This is done by aid of chlorophyll. After the starch is so formed, it is conveyed in the sap to the other parts of the plant, and either stored away, as in potatoes or grain, which consist largely of starch, or transformed into woody fiber or other materials of the body of the plant. And this formation of starch in the chlorophyll grains, and transportation, transformation, and storage to build up the plant, is going on continually as the plant grows. If, then, no starch is formed by the chlorophyll in the leaves, growth is impossible.

Potash Necessary for the Formation of Starch.

Now in every one of Dr. Nobbe's plants grown without potash, after the starch of the seeds was used up, no more appeared in the leaves. As Dr. Nobbe says at the conclusion of over a hundred pages of description of his experiments, without potash the plant "cannot assimilate (the materials needful for its growth), and shows no increase in weight, because, without the co-operation of potash in the chlorophyll grains, no starch is formed."

Dr. Nobbe's second question was: Of the different compounds of potassium, as sulphate, phosphate, nitrate, or chloride, which is best adapted for the buckwheat plant? In the solutions, the chloride proved the best; but there is good reason for believing that in ordinary soils where chlorides are present, the other compounds would be equally good, and, for many plants, much better. The third question was, in substance,

Can Any Other Element Take the Place of Potassium.

The elements sodium and lithium are chemically very closely allied to potassium, and it has been a question whether these could not perform the function of potassium; but in the experiments, sodium was totally inefficient, and lithium positively hurtful.

The Results of these Experiments to be Especially Remembered, are:

1st. No agricultural plant can grow without an abundant supply, in an available and appropriate form, of each of the essential ingredients of plant-food.

2d. Of these, potassium is necessary to the formation of starch in the chlorophyll grains of the leaf.

3d. No other ingredient can fulfill the office of potassium in the plant. The same is also known to be true of nitrogen, phosphoric acid, and each of the other essential ingredients. Each has its own work which no other can perform.

Practical Application of these Principles. The Chief Office of Fertilizers.

Crops can no better grow without a sufficient supply of *each* of these essential elements in the soil than could the plants in the solution. In removing crops from our land, we carry away great quantities of plant food. By continued cropping the available supply of one or more of the essential ingredients becomes too small for profitable production, unless by some means they are replaced. The ones most generally deficient are nitrogen, phosphoric acid, and potash. The chief use of manure is to supply these lacking materials. Stable manure is a complete fertilizer, as it furnishes all the ingredients of plant food, and improves the land besides. Superphosphates, bone-manure, guanos, potash, salts, and other like artificial fertilizers are valuable chiefly for their nitrogen, phosphoric acid, and potash. In their use we should first learn what materials the plant needs, and then select the fertilizers which furnish these in the largest quantity, best form, and at the lowest cost. The needs of a given soil can be best learned by experience and experiment. The only safe guarantee for the composition of commercial fertilizers is in chemical analysis.

Forest Tree Planting.

SECOND ARTICLE.

Last month in advocating the planting of forest trees, first, for the profit they would afford if used or sold as timber and fuel; and secondly, for the indirect profit in sheltering the dwelling, the barns, the orchards, and the crops, we omitted to state a third source of profit, the fruit or nuts. No doubt a forest of chestnuts, hickories, and in favorable localities the pecan, would pay in the crop of nuts a fine rental upon the land, while the value of the timber is annually increasing. In advocating the planting of forest trees, we are at once met by the question, "What shall I plant?" In this article, which in the crowded state of our columns must be brief, we give a list of the most desirable trees; we do not propose to enumerate all that may be planted to advantage, but those which will yield the most prompt direct and indirect returns. First, as to deciduous trees—those which drop their leaves in autumn, in distinction from evergreens. If one settles in a prairie country, he needs trees which will give him shelter and firewood in the quickest possible time, and these are soonest afforded by the

WILLOWS AND POPLARS.—One advantage of these is that they will grow readily from cuttings. However, the White Willow may have been over-praised, it is a most valuable tree; in the absence of this its yellow variety, the Golden Willow, may be used. The same may be said of the poplar, best known as Cottonwood; and the White Poplar, or Abele, objectionable in cultivated grounds on account of suckers, is also valuable. The willow affords a better fuel than the others, and straight poles, which may be used as fence rails. A belt of either will pay as a wind-break alone, and protect other forest trees as well as orchards. The Lombardy Poplar, often commended, is liable to be killed by borers by the time it gets large enough to be useful. No trees will give useful wood and good fuel so quickly as

THE MAPLES.—Unfortunately, two are called Soft Maple: *Acer rubrum*, and *A. dasycarpum;* to avoid confusion, the name soft should be dropped and the trees called Red and Silver Maples. While the last named is a most valuable tree for the planter, the other is of little use but for ornament. Those who as Soft Maple get the Red will be disappointed. The Silver Maple ripens its seed in June, and they must be sown *then.* It has grown in seven years from the seed, large enough to make three ten feet rails to the tree; its wood is useful for inside work, and the fuel is excellent. Next in value is the Ash-leaved Maple, or Box Elder (*Negundo aceroides*); it naturally spreads widely, but when

planted close grows straight; its sap affords sugar, and its wood is similar in value to the other. Both are valuable as first crop trees to be removed when slower ones come on. The Sugar Maple is of much slower growth, especially when young; it will do well on rocky hill-sides as well as on rich prairies. The value of its sugar is well known, and as a fuel it is inferior only to hickory.

HONEY LOCUST, or three-thorned Acacia, is a quick grower, and gives valuable timber and fuel.

THE ASH, both the White (*Fraxinus Americana*) and Black (*F. sambucifolia*), stands first, among the trees producing hard and valuable timber, for rapidity of growth. In ten or twelve years from the seed, these, when planted close, produce straight trunks of sufficient size (eight in. in diameter and 25 or 30 feet high), for any of the many uses for which ash timber is needed on the farm. A few acres in ash will pay better than most farm crops.

CHESTNUT is another quick growing tree, and some claim that it will give more wood in a given time than any other. It has the great merit of sending up shoots from the stump, after it is cut, and the plantation is thus continued. The wood is of little worth for fuel, but it is very durable, and much used for ornamental work. The nuts are always in demand at a good price.

EUROPEAN LARCH.—This is one of the most valuable of timber trees; it grows rapidly and produces wood that is practically indestructible. Sufficient on this for the present, was said last month. Among the slower growers, to be planted with the quick growing ones, and ready to occupy the space when those are removed, are:

BLACK WALNUT, with wood always in demand, though the fruit is of little value.

HICKORY, or Shell-bark stands first as a fuel and its wood is valuable, while its nuts always sell well. The Pignut hickory has harder wood, but the nuts worthless. Another hickory is the

PECAN-NUT, the wood of which is less valuable than that of the others, but the fruit brings a high price. It is best suited to southern localities.

OAKS should not be forgotten; all grow much better if protected by other trees when young. The White, Bur or Overcup, Post, and Yellow Chestnut oaks are the most desirable.

THE LOCUST.—Notwithstanding the ravages of the borers, this tree is too valuable to be given up. It will grow well on land too poor for other valuable trees, and when planted in groves many trees escape the attacks of insects.

AILANTHUS grows rapidly, makes useful timber, and good fuel. The odor at flowering time has created a prejudice against it; this lasts but a short time, and is of no consequence at a distance from the house. It is a very useful tree.

CATALPA, where the winters are not too severe, grows rapidly, and its wood is but little inferior to that of the locust in durability. This and the Ailanthus are raised with great ease, and their merits have been strangely overlooked. The same is true of the Southern Cypress and Osage Orange, which should be planted for timber in mild climates.

THE CYPRESS, or Deciduous Cypress (*Taxodium distichum*), is hardy at New York city; its timber is most durable, and young trees may be profitably grown for grape and other stakes, etc., while the wood for shingles and other uses is most valuable.

OSAGE ORANGE, grows with moderate rapidity, especially in the warmer parts of the country. Its wood is valued for wagon building, and for posts and railroad ties it is almost indestructible.

But little space is left for the enumeration of

EVERGREENS of value, for the usefulness of their timber, their cheerfulness in winter, and especially for the fact that as wind-breaks they are as effective in winter as in summer. They are less planted than they would be were there not a general idea that they are difficult to manage. We shall show, in a future article, how they may be handled without loss. For general utility we place first the

WHITE PINE (*Pinus Strobus*), a native which is always beautiful, grows with fair rapidity, and its wood is more generally useful than that of any other tree; the supply is annually diminishing, while the price is increasing. The next most desirable species of pine for the planter is the

SCOTCH PINE (*Pinus sylvestris*).—This makes itself quite at home in this country, and adapts itself to a great variety of soil. Its wood is about as valuable as that of the white pine.

NORWAY SPRUCE (*Abies excelsa*), is the most generally planted evergreen in this country. It is one of the best for screens, as it is hardy and suited to nearly all situations; its wood in Europe occupies the same place that white pine does in this country.

ARBOR-VITÆ (*Thuya occidentalis*), is a native species, also valued for screens; it is more dense than the Norway spruce, and is of rather slower growth. The wood, incorrectly called white cedar, is durable.

RED CEDAR was at one time highly praised as a desirable evergreen, but its popularity has waned, and it is at present justly regarded as inferior to those we have named. The catalogues offer a long list of evergreens, but we have included here only those that are generally hardy and useful. How to get the trees, by raising from seed or buying, and manner of planting will be given in other articles.

The Rocky Mountain Sheep.

(*See First Page.*)

The Engraving of the Rocky Mountain Sheep given upon the first page of this number, is from a sketch taken from life by Mr. Wm. F. Cary, while on an expedition in the "far west." This animal was first described (1807) as the Siberian Argali, (*Ovis Argali*); later naturalists regard it as distinct, and call it *Ovis montana;* it is a true sheep, and not to be confounded with the so-called Rocky Mountain goat, which is probably a species of antelope. It is found in the mountain ranges from the Rio Grande northward to California, Oregon, and Washington Territory, extending westward to the coast range, and the "bad lands" of Nebraska appear to be their eastern limit. The animal has a large body, a full grown one weighing 350 lbs.; it is clothed with a coarse hair in summer, much like that of the deer, which in winter is intermixed with a fine soft wool. The general color is a grayish-brown, which is darker in some portions, and lighter in others, especially around the head; the legs have a line of white on their rear edges, and the belly and a patch on the rump are white; the tail is very short; the hoofs, in shape much like those of the antelopes, are black. The striking peculiarity of the animal is its horns, which are of enormous size, and have given it the name of "Big Horn," by which it is known to the mountain men. The bases of the horns nearly touch; they rise from the root for a short distance, curving gently backwards, and at the same time circling outward; thus they describe rather more than half a circle, the apex being turned outwards; the horns seem out of proportion to the size of the head; in section they are somewhat triangular. In an old animal they have measured 18 inches around the base, and 36 inches long, following the curve; the tips 19 inches apart; their weight, with the attached skull, 18½ lbs.; the horns are of the same color as those of the common sheep, and marked with transverse wrinkles. The female has much smaller horns, only 6 or 7 inches long. Mr. Cary states that he has seen them in flocks of 30 or 40, grazing near herds of buffalo and antelope; besides grass, they feed upon the bark of trees. When alarmed they at once take to the mountains, and they are so very shy that one may be in the locality where they abound, and see frequent "sign" without ever getting a sight of the animal. To get a shot at this game the hunter must get above it, as practiced by the chamois hunters of Europe. The flesh of the mountain sheep is much like that of mutton, but it is less fat, and has a "gamey" flavor relished by many. The meat, like that of the buffalo, is sometimes offered in the New York markets, and is served at the restaurants as a rarity. It would be interesting to see the result of crossing this wild species with some of the breeds of domestic sheep.

Ogden Farm Papers.—No. 73.

BY GEORGE E. WARING, JR.,

[Col. Waring furnished us with a paper of the usual length, but such is the crowded state of our columns, that we have been obliged to condense wherever it was possible, and as a part of his article will be quite as seasonable another month, we reluctantly leave out a portion of it.—ED.]

A correspondent in Illinois asks: "What amount of milk can be depended on from a three-year-old Jersey for ten months, after coming in?"—*A.:* Average per day six quarts, with the advantage over other breeds that it would be less during the early part of the milking, and much more during the last month.

"How much butter will they ordinarily make under fair treatment?"—*A.:* From 200 to 225 pounds per annum...."Will high grades, which are much cheaper than thorough-breds, be equally profitable?"—*A.* If of good quality there will not be much difference so far as their butter products are concerned, but the difference in the value of their progeny would soon made up for the difference in their original cost...."Will not grades be found hardier, better feeders, and give more milk of nearly, or quite as good quality?"—*A.* The Jersey is perfectly hardy in all sections of our country, as much so as any cow we have, and when dried off will fatten as readily as any other animal having the same tendency to the secretion of fat with the milk. I should say, that, as a rule, in proportion as the quantity of milk is increased, will its quality be reduced, and that with a considerable infusion of good blood, any falling off in quantity will be accompanied by an improvement in quality. He says: "I have supposed the objection to Jerseys to be the small amount of milk given so that families desiring to use milk freely could not be supplied by one cow, even when the milk is not used for butter. Is this correct?"—*A.* In one sense the Jerseys are small milkers. Very often they fall below twelve quarts per day at their very best, and often toward the end of their milking they give but three, or four, or five quarts per day, but it is to be remembered that they give this reduced amount during weeks and months, when other cows would be entirely dry. The common cow is not well adapted for the use suggested, because, while she will for a month or two flood the pantry, beyond the requirements of the family, she will leave them to buy milk, often during nearly one half of the year, while the Jersey may be depended upon during, at least, nine months for a very satisfactory supply, and during six weeks, or two months more, for a smaller quantity, which has by this time become almost as rich as cream. Where a large quantity of milk is needed for family use, the year round, it is advisable to keep two little Jerseys, consuming together no more than one shorthorn cow—one coming in in the spring and one in the fall, and so keeping up a regular supply of the best milk, and the richest cream throughout the whole year, and (mixing the milk of the two) pretty nearly uniform in quantity month after month.

The following comes from Massachusetts: "How many acres of land will it take to soil six cows and three steers, which are intended for fall fattening? Our soil produces corn, clover, and roots very freely and cheaply, better in fact than it does pasture grasses. To feed this number of cattle, what crop should I put in, in what succession, and what the acreage of each? Would it be on the whole cheaper to soil than to pasture? Unimproved land costs from $25 to $50, or more per acre."

The amount of land required for this duty will, of course, depend very much on its quality, the amount of manure used, and the thoroughness of the cultivation. I should expect to accomplish the result satisfactorily on my own land with four acres, which I should divide into plots of one-fourth of an acre each; sowing oats on one plot as early as possible in the spring, and on a second one ten days later, and on a third ten days later than that. On a fourth I should try spring wheat. Then, beginning as early in May as the experience of the neigh-

borhood showed to be safe, I should drill corn for fodder (at the rate of four bushels to the acre), on one of the quarter-acre plots, following in like manner with the remaining plots in succession at intervals of from four days to one week, according to the weather. Sometime after the last of these plots is planted, the four that were in oats and wheat will be ready to be taken up in their turn; and they should have a second manuring before being planted to corn. This course would probably produce more fodder than would be required to keep the nine head of stock in best condition up to frost, and the surplus being cut and cured, and stacked in the field, would, with the addition of a little meal, probably carry them on in good condition well toward the first of December.

Whether this process would be cheaper and better than pasturing on land at the price named, must depend entirely on the natural character of the pasture, their nearness to the barn, etc., etc. Under ordinary circumstances, I think it would be cheaper, and I am satisfied that it would be better, in a majority of cases.

Such a method of keeping cattle gives one that control over the manure produced that must inevitably lead to an improvement of the land, and the system recommended, it should be understood, is only for the first year. If the process is to be repeated in subsequent years, then the first two plots sowed to oats should be sowed to winter rye early in September (earlier than if for a grain crop). Rye sown this early may grow too large before the heavy frosts check it, and in such case may, with advantage, be pastured off pretty severely (by tethering), when the ground is sufficiently dry.

A correspondent in Maryland asks: "Are Mangolds, Ruta-bagas, or Sugar Beets best for me to plant? I intend to use them for milch cows, breeding ewes, sows with pig, and young growing pigs. I think I have seen in the *American Agriculturist* that any of these roots could be transplanted. Now, if this is so, could I grow my plants in beds, and plant them afterwards, just as I would sweet potato, or cabbage plants? Hitherto my great trouble with these crops has been in thinning them out. Which are the best varieties?"—My experience and observation indicate that the best beet is that known as Lane's Improved Sugar Beet, which approaches the size of the Mangold, but has much more saccharine matter, though not equal in this respect to the smaller Sugar Beet proper. The Ruta-baga is also a capital root, but both require very high manuring, and clean cultivation. Both may be transplanted without difficulty; the ruta-baga in this regard differ in no material respect from the cabbage, and may be transplanted at about the same size; but I have had the best success with the beet family in transplanting them when most of the roots were from one-half to three-fourths of an inch in diameter. They should be topped at about the foot of the spreading part of the leaf, and the tap root should be cut off, so as not to fold up when inserted in the dibble-hole. When transplanted at this size, and with this precaution against too rapid leaf action, the bulb itself contains sufficient moisture to support the plant until it is established and formed new leaves. I have found the cultivation of these plants in seed-beds quite easy and inexpensive (the bed being in clean land), and the transplanting less laborious than thinning.

Bee Notes for March.

BY L. C. ROOT, MOHAWK, N. Y.

The results of the past few years teach us the necessity of proper management during this and the following two months. It is a common remark of those who have lost heavily of late, that they can winter their bees well enough, but their trouble is to get them through the spring months. Nearly all the old bees that are in the hives at the time they are taken from their winter quarters—even when this is done at a suitable time, will, under the most favorable circumstances, die within six weeks or two months; hence the necessity of controlling brood-rearing, so that it shall be attended with the least possible outlay and loss. Every intelligent beekeeper aims to have his bees strong as early in the season as possible, and his anxiety to secure this result is often the direct cause of the reverse. On the first fair days of this month, he takes his bees from their winter quarters, and places them on their summer stands, and, following the advice of most writers of the past, he examines each to ascertain its exact condition. All this induces breeding, and if a few warm days follow, it will be found that the queen has deposited a large number of eggs. There is a limit to the bees' capacity for labor, and if, under these unfavorable circumstances, they are busy with extensive brood-rearing, they will naturally die off much sooner than if they remained quiet until a later period, when brood-raising can be conducted with less labor. The loss of a bushel of bees from one hundred swarms in the cellar, where all may be seen, seems enormous, while twice that quantity may be lost from their summer stands, though from being widely scattered on the ground, the loss is seldom realized. I am aware that in advising against a practice so long and generally advocated, I shall fail to induce many to adopt my views. One writer claims that upon the operations of the present month will depend the result of the season. That this month's operations are all important I am fully aware. What the condition of the swarms is to-day should have been decided last October. The principal effort of this month should be to carry the bees over the occasional warm days as quietly as possible. The time to place bees on their summer stands will vary according to the latitude. The blossoming of the soft maple will best indicate the proper time; or they may be taken out a little before this.

How many Swarms in one Locality?

I am asked what number of swarms I would advise keeping in one place during the working season. This will depend much on the amount of forage. There are locations where a large number could not be kept, while a few swarms would thrive and give a fair yield. In almost any locality there may be times when a certain kind of blossoms would materially aid a few swarms, while a large number would receive but little benefit. Yet for this gain, it would not be advisable to divide an apiary—placing the parts in two locations. If, during the general yield, forage is abundant, I should be slow to advise a division, even if there should be one hundred swarms.

Answers to Questions.

As to the best month to commence keeping bees?—beginners should not purchase stocks until May, as great care and experience are necessary to carry them through from the end of winter to that time....In answer to questions regarding the general condition of bees throughout the country, I would say that I have recently visited several beekeepers of this state, who keep from one to seven hundred hives each, and it is gratifying to find them in such apparently fine condition.

Bee-keeping at the Centennial Exhibition.

I desire to call the attention of bee-keepers to the opportunities presented by the Centennial Commission for the exhibition of bees, honey, and apiarian implements generally, at the Centennial Exhibition. They offer to put up a special building for the purpose, and there seems to be good reason to believe that every necessary facility will be given. I understand that the Bee-keepers National Convention will meet in Philadelphia, which will afford bee-men a fine opportunity. I will endeavor to give the necessary details in due time.

"A New Method of Growing Plants."

BY PETER HENDERSON.

A new genius has appeared; he lives "out west," and he sends me a circular headed as above. He claims that by his "new method," "tomatoes ripen from four to six weeks, and cabbages from two to four weeks earlier than under any other mode known to gardeners." He also states that his thirty years' experience as a practical gardener, has developed this "new process" of growing plants, and he wishes it to be "distinctly understood" that it is not "patented," therefore he "shall be very careful to whom he imparts his secret!"—Like this western man, I too have been a digger and delver in the earth, for upwards of thirty years, and in that time have learned that whenever any one laid claim to any "secret" pertaining to the art—particularly if he offered to sell it as a secret, that he was either an ignorant pretender, or something worse. I need not say to your practical readers, that the only way that this would-be benefactor to the cabbage growing community, gets a crop any earlier than his neighbors in the same latitude, and on the same soil, can be by forwarding the plants by artificial means in hot-beds or greenhouses. If he likes to go to that expense, there is nothing to hinder his so doing, and for that matter, he might have doubled the time of "earliness" of such culture, compared with culture without these means, and still told the truth. But when he wants to make us believe that the knowledge of such means of forwarding is a "secret," as yet in his exclusive possession, and asks us to buy it, I for one do not wish to become the purchaser of such a doubtful pig, enveloped in such a doubtful bag. It can not be too often or too earnestly impressed upon your inexperienced readers, that the laws that govern plant growth, are just as certain and unerring as the law of gravitation. Every plant *according to its nature*, requires a certain time, under a given temperature, to mature. For example, if tomato seed is sown in the *open ground* in May, in the latitude of New York, the crop will ordinarily ripen during September. The same seed sown in the open ground in February, in Florida, would be likely to produce its crop of ripe fruit in June—or in both cases, without artificial means, in about five months, and in these five months named, it would be found that the *average* temperature at these dates, from May to September in New York, and from February to June in Florida, would be nearly the same. Now when, with our artificial appliances of hot-beds and hot-houses, we can govern the temperature at will, it can easily be understood, that when the same conditions of temperature that we have in early summer outside, can be obtained under glass, a plant of tomato, cabbage, or anything else, thus "forwarded," so as to be set out at the season it will grow outside, will mature just so much earlier.

I wrote to the discoverer of "the new method," asking how much would be the cost of imparting the "secret," and find that his terms are very reasonable; for the County of Hudson, N. J., (where I, together with some hundred or more other market gardeners are located), he only asks $300 for the season, but "cash down," is an imperative condition; no after-claps can be considered for a moment. Now when it is claimed that the "new method" will mature tomatoes four weeks, and cabbages six weeks sooner than the old method, and that the quantities of these products are enormous in our county, amounting already to millions, and that their maturing so much sooner, would fully quadruple their value, it will be seen that for only $300 "cash down," the millenium of the cabbage grower can be brought about in this Centennial year.

But no doubt in this, as in all other good things, some carping, caviling, doubting fellow, will be ready with impertinent insinuations; he will be asking why this western man is so ready to sell his birth-right, or brain-right, for such a miserable mess of pottage as $300 "cash down." All he has to do is to pull up stakes, and come and plant his tomatoes and cabbages in Hudson Co., N. J., and realize in one season a hundred times $300, "cash down." The columns of the *American Agriculturist* have already saved hundreds of thousands of dollars to its readers, by preventing them from falling into the hands of such men as the discoverer of the "new method" evidently is, but if any of them should feel like trying his "secret," let the bargain be on the "no cure no pay" plan—that is, let a contract be made that the "new method" will *first* be shown to the would-be purchaser to produce tomatoes or any thing else, four weeks sooner than the "old method," but on no account should they pay $300 or any other sum "cash down."

A House Costing $2,000 to $2,300.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan, embodying the principal characteristics of a design I made seven years ago, for the residence of Mr. Arthur Waller, Newtown, L. I., has a homelike, tasteful, and picturesque appearance—particularly now, with its neatly laid-out grounds and grown up shrubbery, which especially befit its *pointed style*, and demonstrate the harmony that exists between these simple *cottage* outlines, and rural surroundings. It is thus adapted to either a suburban, or more retired country situation....**Elevation,** (fig. 1.)—A noticeable peculiarity is the earth finish around the foundation, which is simply utilizing the earth from the cellar. This is banked against the foundation, up to within six inches of the wood, evenly graded at 45 degrees angle, and neatly covered with closely laid turf. This conceals a roughly constructed foundation; it insures more dryness of the cellar, and consequently of the whole house; it guards the cellar against extreme heat in summer, and frost in winter; and it gives such a visible breadth of bottom, as to add to its apparent strength. This earth finish around the foundation is especially adapted to wet or clayey soils, where it is desirable to have the cellar mostly above ground; at the same time it secures greater altitude to the whole building....There are marked features of dissimilarity in the several openings, and in the details of the exterior dressing—each part being adapted to its special purpose, and so

arranged as to be in keeping with the general design. It therefore unites harmony and beauty.... **Cellar,** (fig. 2.)—The Cellar extends under the whole house, clear hight 6½ feet. The outside entrance to the cellar is by an area-way, having stone

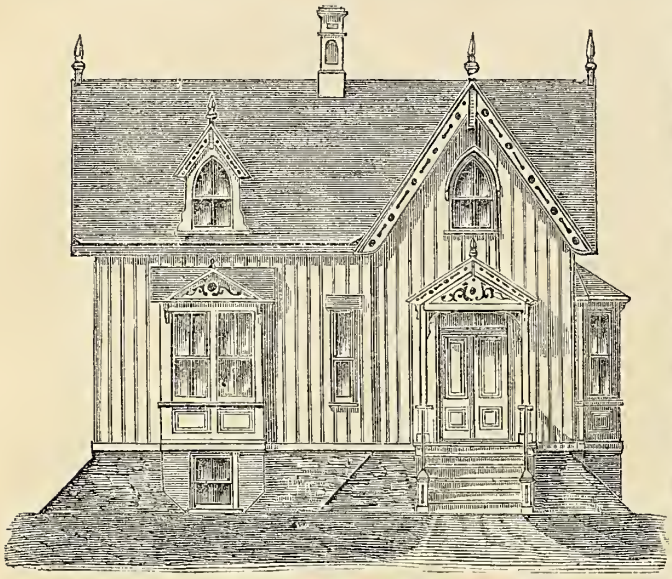


Fig. 1.—ELEVATION OF HOUSE.

steps and walls, with hatchway and inside doors; the hatchway doors, when closed, being even with the sloping earth finish.... **First Story,** (fig. 3.)—Hight of ceiling 9½ feet. The irregular outlines of this plan contribute to the cheerfulness of the different apartments, by giving opportunity for the insertion of windows where they will command the most pleasing prospects. The principal entrance is from the porch through double doors to the spacious hall, which adjoins the parlor and dining-room. The *Parlor* has one bay and two plain windows, with large wall space for furniture and wall decoration. The *Dining-room* is conveniently arranged to connect with the principal hall, parlor, rear lobby, large pantry, or closet, and the cellar stairway; and has a large bay and one plain window. [It would be far preferable to have the cellar stairway start from the kitchen, to avoid going through the dining-living room to reach it from the kitchen.—Ed.] The *Kitchen* is planned to have a Range, Sink, Pump, Wash-tubs, and the usual pipes for cold and hot water, and is provided with two windows, situated in opposite sides of the room, to give abundant light, and afford thorough ventilation; a closet adjoining the chimney breast; and a cupboard is beneath the sink. The Pantry is of good dimensions, contiguous to both dining-room and kitchen, has a suitable window, and is furnished with shelving. The rear entrance is from the covered stoop, to the rear lobby, and from thence to either dining-room or kitchen..... **Second Story,** (fig. 4.)—This story is reached by a winding stairway from the principal hall, and contains 4 good-sized chambers, a bath-room, 5 large closets, and the needed passage-ways. The breast-walls are vertical to the hight of 3½ feet, and are continued upward along the underside of the steep roof framework to the ceiling, which is 8 feet high. The Bath-room is provided with a bath-tub and seat-closet. The Tank is 1 foot 8 in. wide, 2 feet long, and 3 feet deep, and is placed in the closet adjoining the bath-room, at a hight of 2 feet above the floor, and provided with a neat fitting lid. The spaces above and below the tank may be used as a closet for toweling, etc. The *interior location* of this tank should insure it against frost, so long as the house is occupied by the family.... **Construction.**—The excavations for the cellar are 2 feet deep, and the earth is used as above described. The materials for the principal foundations may be of the roughest stone, such as are commonly used in farm fencing—and coarse mortar. Very little skill is required in the construction of these walls, as only the last or top course is seen from the outside, which should be laid to a line, and levelled to receive the frame work. The exposed portions of the bay-window foundations are constructed of brick laid in mortar, resting on stone-work, and leaving an interior recess or shelf, as shown on the cellar plan. The cellar windows are of good dimensions, and situated where they will insure sufficient light, and provide for the complete airing of the cellar. An opening should be left in one, or both of the chimneys, near the cellar ceiling, having a continuous flue to the top, which will be heated by contact with the fire-places above when in use, and produce a draft that will exhaust the poisonous vapors always generated in cellars, and prevent them from rising through the house to contaminate the air of the living-rooms. This cellar may be easily and cheaply divided into separate apartments by rough planking or otherwise if ever desirable. The rear portion might be readily converted into a laundry, where the wash-tubs, with their accompanying pipes, might be placed, leaving more kitchen room, and relieving it of the steam, and general disturbance of the ever recurring washing days. Large durable posts are placed in the cellar, resting on large flat stones that have been embedded in the cellar bottom, as supports for the 4x8-inch girders, shown on the cellar plan by the dotted lines. By the estimate it will be seen that very little timber is used in the framework, of which the sills and beams comprise the heavier parts. I would enforce the importance of having the frame fitted, and secured together in a substantial manner. The beams should be bridged as described in the Sept. *American Agriculturist*, 1875....The exterior sides of the frame-work are designed to be inclosed with double boarding, with an intermediate lining of tarred felting. The first covering should be milled to even thicknesses, and put on horizontally, and double nailed to each stud. The felting is next applied in whole width strips, running from the sill to the plate. The water-table, and window frames are next put in their places, after which the final covering of tongued and grooved sheathing is put on vertically, with the lower ends neatly fitted to the water-table, and the upper ends covered with a 10-inch board forming a frieze to the cornice. The siding should then be painted one coat in a thorough manner, when battens of 1½ inch "half round" (previously painted both sides) are firmly nailed over the joints of the sheathing, after which all nail holes should be stopped with putty preparatory to the final painting. The windows are all arranged for 1½ inch sash, hung to iron weights with good cord, and neatly eased and molded on the inside; outside blinds are intended for each window above the cellar. The cornices are constructed in the simplest manner, and the perforated barges, and finials, are made as indicated by the elevation, and placed near the extremity of the gable corniees, from which ever varying shadows are made against the building, producing the most delicate and pleasing effects. It is purposely intended that the roofs of the principal building porch, stoop, bay, and dormer windows, shall have sufficient pitch for shingling, so that no tin work is required except for the valley, and gutter strips; these may be prepared at the shops of any tinsmith, and laid by those employed on the building. ....The character of the balance of the work may be inferred from the estimate which is given in detail. **Estimate:**

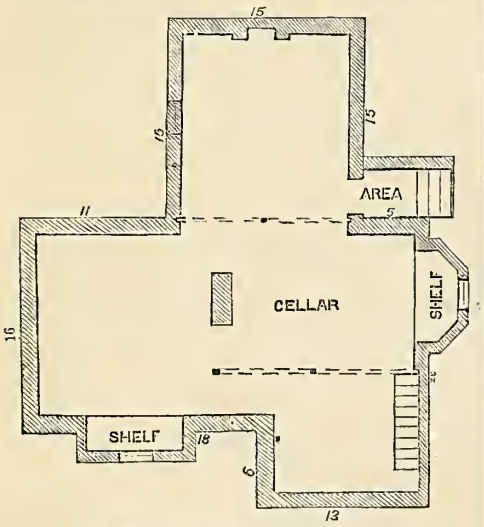


Fig. 2.—PLAN OF CELLAR.

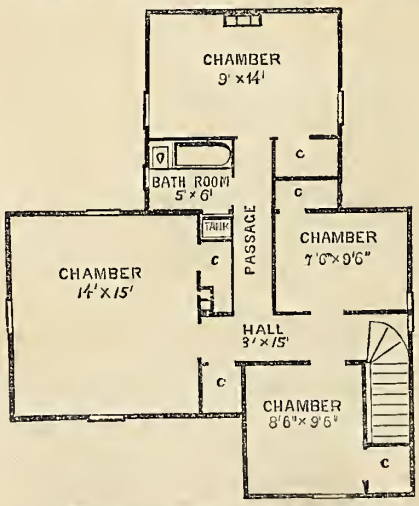


Fig. 4.—PLAN OF SECOND FLOOR.

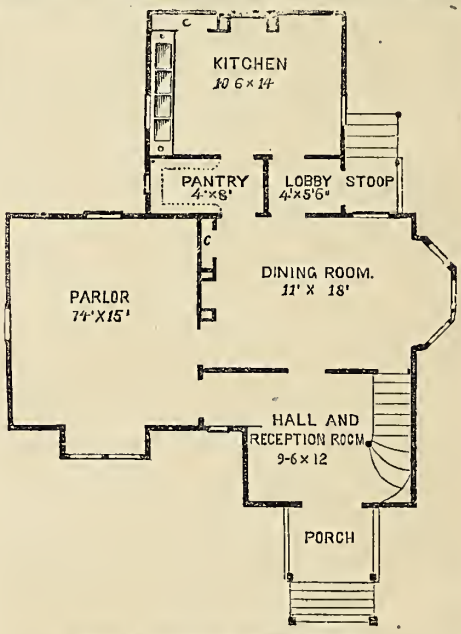
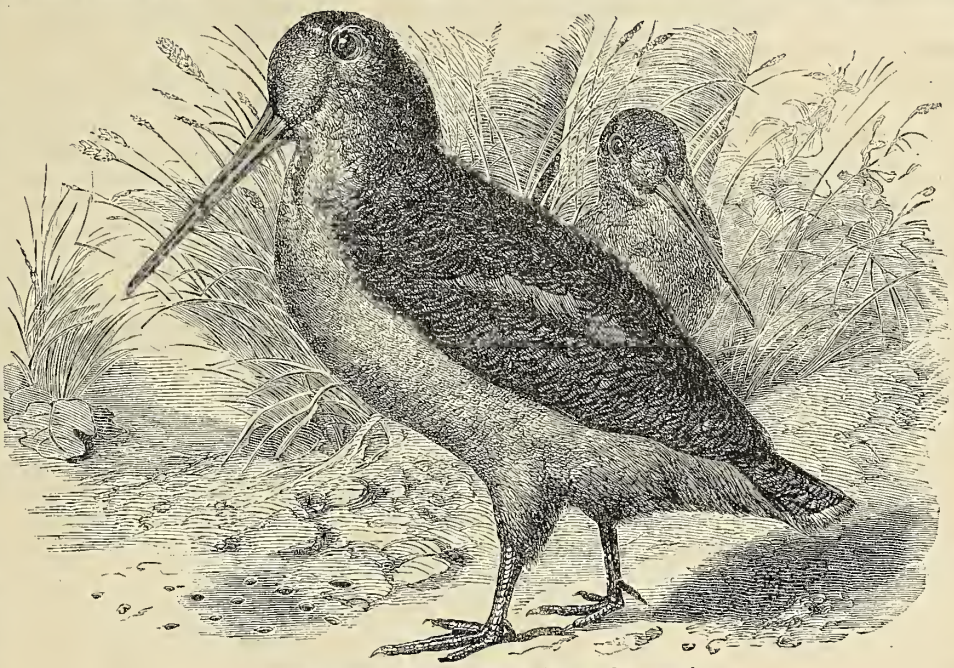


Fig. 3.—PLAN OF FIRST FLOOR.

61 yards Excavation, @ 25c. per yard	$ 15.25
1,278 feet Stone Foundation, complete, @ 12c. ℔ foot	153.36
5,000 Brick for bays and chimneys, (furnished and laid,) @ $12 ℔ 1000	60.00
80 feet Stone Steps, and Coping, @ 30 c. per ft	9.00
660 yards 3-coat Plastering, complete, @ 35c. per yard	231.00
3,526 feet Timber, @ 2c. per foot	70.52
viz. 1 Sill, 4x8 in. x 151 ft. long. 13 Beams, 3x8 in. x 22 ft. l'g. 10 Posts, 4x6 in. x 13 ft. long. 19 Beams, 3x8 in. x 16 ft. l'g. 1 Plate, 4x6 in. x 136 ft. long. 15 Beams, 3x8 in. x 15 ft. l'g. 4 Valleys, 3x7 in. x 17 ft. long. 1 Beam, 3x7 in. x 80 ft. l'g. 1 Girder, 4x8 in. x 16 ft. long. 50 Rafters, 3x1 in. x 13 ft. l'g.	
300 Wall Strips, 2x4x13, @ 13c. each	39.00
200 Sheathing, 9 inches, at 18c. each	36.00
100 lbs. Tarred Felting, @ 5c. ℔ lb	5.00
200 tongued and grooved Sheathing, @ 28c. each	56.00
200 Battens, @ 6c. each	12.00
Materials in Cornices and Water-table	38.00
325 Shingling lath, 1¼x2x13, @ 6c. each	19.50
60 bunches Shingles @ $2 ℔ bunch	120.00
177 Flooring, 1¼x9½ in. @ 25c. each	44.25
2 Stoops, (front and rear) complete	80.00
2 Bay Windows, (with blinds) complete	135.00
10 Plain Windows, (with blinds) complete, @ $12 each	120.00
4 Dormer Windows, (with blinds), complete, @ $20 ea.	80.00
3 Cellar Windows, complete, @ $6	18.00
Stairs, complete	75.00
24 Doors, complete, @ $10 each	240.00
3 Mantels, complete, $20, $10, and $6	36.00
Shelving, etc., $12; Nails, $18; Painting, $110	140.00
Plumbing and Range, complete	222.70
Cartage, average 1 mile	25.00
Carpenter's labor not included above	175.00
For contingencies	44.42
Total cost, complete	$2,300.00

Woodcock and Snipe.

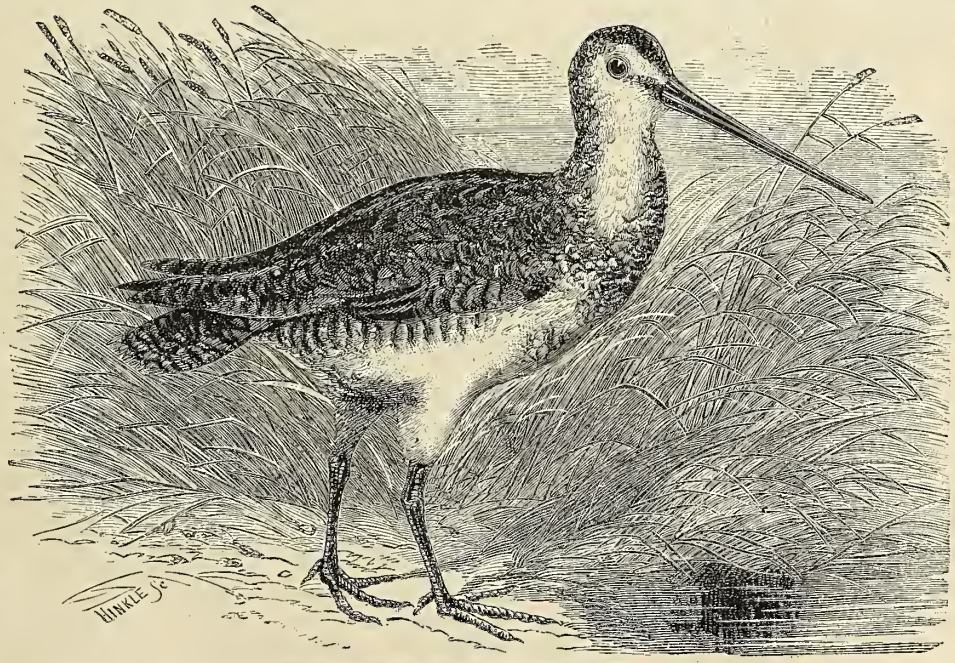
Strange as it may seem to sportsmen, many people who have lived all their lives in the country, do not know the difference between a Woodcock and a Snipe. In the view of many, all birds having a very long bill, are Snipe. Should these persons visit a city market, they would learn at least one difference, for they would find that the price of a dozen Snipe would only buy a single pair of Woodcock. The two birds are closely related in their structure, and there is not nearly so much difference between them in the eye of the naturalist, as in that of the sportsman, who hunts, and of the epicure who eats, them. Both birds belong to the Snipe family, or *Scolopacidæ*, so called from *Scolopax*, the European Woodcock, which was the ancient Greek and Latin name of that bird. This family includes not only our Woodcock and Snipe, but several other birds that are of interest to the sportsman. We find here the Sand-pipers, the Godwits, the Curlews, and several birds incorrectly called Plovers, and those known by the popular name of "Teeters." These birds, generally of medium or small size, have, without going into ornithological characters, one point in common; they obtain their food by feeling for it in the sand or mud, and to accomplish this, they are provided with a very slender and long bill, which is remarkable not only for its length, but for being peculiarly sensitive, which allows them to select their food, while it is hidden from sight, by a delicate sense of touch. The bill is in some genera straight, and in others curved upwards or downward. Another quality, which the family have in common, is a peculiar excellence of flesh, which makes them highly prized as delicate food. They are all migratory, and the majority, when not breeding, are to be found in large flocks; all breed in northern localities; commonly lay four parti-colored eggs, and the young are able to run about as soon as hatched. Leaving the other birds of this family, we will confine ourselves to two, the Woodcock, and the American or Wilson's Snipe; of these we have had accurate engravings prepared, which will allow those who do not care for technical descriptions, to distinguish these two valuable and very closely related birds.



THE AMERICAN WOODCOCK.—(*Philohela minor.*)

THE AMERICAN WOODCOCK has been by some naturalists placed in the same genus with the European Woodcock, but it is much smaller, and differs sufficiently in the size and shape of the first three quills of the wing, to place it in a different genus, and ornithologists call our bird *Philohela minor*. It is of course distinguished by peculiarities of plumage, length of toes, and other characters, but the popular feature in the bird, and one which allows it to be distinguished from all others, is the eye, which is very large for the size of the bird, and is set away back and in the upper corner of the head, in such a manner as to appear as a deformity. No doubt, when the bird has its bill thrust deep into the soft soil, in search of food, the eye is then found to be in the most convenient position possible. The Woodcock is most abundant in the eastern states; it extends from Nova Scotia to Kansas and Nebraska, where it is found sparingly. There is, perhaps, no common bird, the habits of which are so little known as those of the Woodcock, as it is at once the most shy and the most fearless of creatures. The birds appear in the northern states early in March, usually about the 10th; they breed in New York and New England, their nest being scarcely more than a heap of leaves; the eggs, usually four, are of a drab color, tinged with white, and spotted with brown and lilac; both birds aid in incubation; so fearless are they at this time, that one writer says he has known an ox-cart to be driven within a foot of the nest without starting the female; and a friend who is an active sportsman, and knows all the ways of birds, informs us that he has in a procumbent position, approached so near the nest, that had his hat fallen off it would have struck the sitting bird; yet the mother bird only gazed at the stranger with those remarkable eyes of hers, without a sign of fear. It has fallen to the lot of very few to have seen the Woodcock's nest, and there is but little known about the ways of the young birds. In summer, the flight of the Woodcock is very short, and it often alights within a few feet from the place where it started; but in autumn it takes a longer flight, rises with a peculiar shrill twitter, and frequently goes to a long distance. It is a great puzzle to sportsmen to account for its almost total disappearance during the moulting season in August; at this time the birds leave their former haunts, and do not re-appear until Oct. In most states the birds are protected by game-laws, from January 1st until July 4th.

THE AMERICAN SNIPE is readily distinguished from the Woodcock by its different shape; its body is more slender, it has longer legs, and a very different look throughout; one of the points relied upon by ornithologists is, that the *tibia* (drumstick) is, in the Woodcock, feathered down to the very joint; in the Snipe the *tibia* is naked in its lower portion, and covered with scales like those on the *tarsus*, or what in a fowl is popularly known as the leg. This bird is sometimes called the English Snipe, as the early settlers gave to the birds, plants, and trees, which resembled those they had left at home, the names they were familiar with. This bird is quite unlike the Snipe of England, as was shown by Wilson, on which account it is often called Wilson's Snipe, as its systematic name, given by Lucien Buonaparte, is *Gallinago Wilsoni*. It is found throughout North America, and extends through Mexico to South America, and westward to Montana and Wyoming. It sometimes breeds in northern New England, though preferring a higher latitude. It arrives in the neighborhood of New York early in March, after a while it moves further north to its nesting grounds, along our northern border and in Canada. It forms a nest of loose grass and leaves on the ground, in bogs and thickets, in which are laid three or four olive-drab eggs, thickly marked with brown spots, especially towards the large end. The Snipe begins to return from the north in September, and not having the cares of a family, takes its ease among the rushes and tussocks of the swamps, and becomes fat and lazy. It sometimes lies so close that it may be approached to within a few feet, when it suddenly starts with its well known "*scaipe*," which frequently disturbs the equanimity of even old sportsmen. The Snipe, like the Woodcock, bores into the soft ooze in boggy and wet spots for worms and such other creatures as may be found in these places; besides this, it devours numerous insects that it finds in the wet grass, and even eats leeches from the ponds. The Snipe is, in one respect, very puzzling to the sportsman, as the birds may be found in great abundance in a given locality one day, and the next day he may hunt over the same



THE AMERICAN SNIPE.—(*Gallinago Wilsoni.*)

ground, no matter how thoroughly, without getting up a single bird. Some ascribe this peculiarity to some meteorological influence; whatever may be the cause, we know several experienced shooters, who can give abundant instances of the sudden disappearance of Snipe in places where they were to be found in great numbers the day before.

Among the Farmers.—No. 2.

BY ONE OF THEM.

I was writing last month about the farmers of the Channel Islands, and far from exhausted the subject. If their success in raising any one crop is beyond dispute, I should say that crop is

Early Potatoes.

They not only raise potatoes as a first crop, and of course have them fit for market as early as possible, but their stock of seed potatoes is raised as a second crop—often upon the same land. This second crop is not a large one, but as it is dug on the approach of cold, or rather cool, weather, it keeps in good order for early planting. They were digging this crop, consisting of both early and late sorts of potatoes, when I was on the Island of Guernsey, after the middle of October. In some cases it had followed early potatoes, in others some other early crop. It is a severe tax on the land, thus to yield two crops without high manuring and real garden culture, which these hardly have. Yet the first crop is a bountiful one, varying with the season of course, and seldom showing a tendency to rot. The secret of their success, if secret it be, is, I think, in the use of sea-weed, and the ashes of sea-weed as manure. These are applied alone, or in composts with other manures, in close proximity to the plants, and upon light land, at least.

Sea-weed.

The richness of the sea-weed in alkalies, as well as in nitrogen, and the presence of a considerable proportion of salt and of lime, make it peculiarly adapted for a potato fertilizer. It would seem a shame to burn so valuable a manure, were it not for the fact of its great abundance. Were there less of it, no doubt the farmers would be glad to pay a higher price for it than its worth for fuel; as it is, it affords an inferior but valuable fuel for poor people, and there is a prompt sale for the ashes.

Collecting the Sea-weed.

There are two principal kinds, as with us, the "eel-grass" and "rock-weed," the latter being by far the richest. That which is torn off by waves and storms, and washes ashore or floats about, is common property, and is gathered constantly as the tides recede, and dried in the sun upon the sands above the reach of waves, being spread out quite thin, and when dry, raked together and stacked up. At certain seasons, however, for a few days at a time, people are permitted to tear it from the rocks. This makes lively times along the shore, when the weather is favorable, and the "Vraic gathering" is looked forward to as a sort of farmer's festival or holiday, and valued as such, it would seem, almost as much as for the sake of this "harvest of the sea."

Sea-weed Used on Other Crops.

The alkali of the sea-weed, in connection with its other constituents, is peculiarly conducive to the growth of the root crops proper. Parsnips and carrots are extensively raised, and sea-weed usually forms an important portion of the manure used for them. I think our sea-shore farmers may profit by these hints, and by using sea-weed composts for potatoes and roots, secure comparative freedom from damage by wire-worms and other insect depredators, and also furnish to the crops pabulum well suited to their wants.

Ponies.

Perhaps it is the excellence of the roads, as much as anything, which makes ponies so common among the farmers of the Channel Islands. Their use is, however, not by any means peculiar to these islands, but throughout Great Britain ponies are much more extensively used than with us. The time may come when we shall have breeds of ponies peculiar to isolated districts of our own country. The Kanuck indicates a tendency in that direction, and the ponies of Mexico and the plains show that, left to a natural or semi-natural life, breeds of ponies will be formed, which may be of great value when the types become fixed, and we make a definite place for them in our agricultural or social life. In Great Britain there are the Shetlands, the North Country ponies, which closely resemble them, the Welch, the New Forest or Hants ponies, which are larger and more like little horses, as well as other kinds, and these Islanders are situated conveniently for the importation of one of the toughest, strongest, and most serviceable breeds of ponies which exist, those of Hants (Hampshire).

The farmers use their heavy Brittany teams for farm work, while they have their ponies for the road and for light jobs. They have the merit of being safe, quick, good tempered, lasting, hardy, intelligent, not expensive to keep, and easily controled. They are used in light two-wheeled vehicles, convertible at once from a pleasure gig into a cart capable of carrying to market twelve to fourteen sacks of grain, or a couple of sides of beef, or a sow and pigs. These pony carts somewhat resemble a New York butcher's spring cart, but are lighter, smaller, and trimmer.

The Use of Two-wheel Vehicles

is much more common on these Islands than with us, and many of them are of unique construction, and very convenient. The hay cart, for instance, has two curved pieces starting from the front of the frame, and first rising a little higher than the back of the horse, then curving forwards and running out over the horse so far that the ends have to be braced to the shafts beneath them. They are of course connected by slats, ladder-fashion, and when the load is on, only the head of the horse projects in front. They haul as much hay with one horse as we do with two, and perhaps more in weight, as the bulk seems to be the same, and their hay is rarely or never so dry as ours, nor so coarse, but usually fine, green, and heavy. I noticed a peculiarity in attaching the horse to most of these carts or other two-wheeled affairs, both on the Islands and in England. The shafts are very much bent, and are fastened to the saddle as high up as possible—often level with the withers of the horse; besides the vehicles are invariably loaded so that they will not bear *down* upon the horse at all, but almost constantly bear up on the belly-band. Our philosophy in the matter is that a moderate weight upon the back gives the animal a better hold upon the ground—their's, that being relieved of all weight upon the back, and having only to pull the load, the horse is less easily fatigued, and I must say I think the weight of argument is with their reasoning. Yet, no doubt, sometimes a horse pulls better for carrying a light load, especially on ground where he does not get a good foothold.

Speaking of Markets

reminds me of the real disadvantage our American farmers labor under, in not having market days, and weekly or periodical markets at the county towns. It may come about yet, when we have hard money, and a dollar is worth 100 cents, and farmers are not the prey of speculators, and are not quicker to learn the bad than the good tricks of the trade.

In some states the days on which court is held are virtually market days to some extent, and might be made still more so. Those occasions are made use of for holding auction sales of live stock and other goods. They are days of general rendezvous, when appointments are made, weeks before-hand, perhaps, for meetings to conclude bargains, to trade horses, to pay interest, or to exchange deeds. If a little interest in the subject could be excited, and farmers of a few contiguous counties would agree among themselves to hold regular market days at the county towns, on court days if possible, and either to put off selling most things until market day, or if, so to speak, forced to sell by high prices offered, to conscientiously appear at the next market day, and report the sale in detail for the benefit of his bretheren, and not keep whist for the benefit of the speculator, market days would soon be established here, and no doubt the custom would prove contagious enough.

In the Island of Jersey, Saturday I found the regular market day. There was much stir in the town of St. Helier, especially in the vicinity of the markets. In the corn-market, buyers and sellers were comparing and dickering over samples of grain of all kinds. The floor was dotted with heaps of sacks, and the whole look of the participants in the scene indicated serious business. In the live-stock market, horses, donkeys, cows, and heifers, and pigs were offered. The last were especially numerous, and more contented, well fed little families one rarely sees, than were snugly ensconced under the seats of the pony carts. White pigs seemed the favorites, but a little Berkshire, and other improved blood, had been introduced with good effect. Sales of stock which had been made during the week, are all settled for on the market day, and so it is with other farm produce. It was the time for shipping apples. These were delivered at the "weigh-bridge," (hay scales), at the head of the pier, during the week, and settled for in cash or checks by noon, or soon after, on the market day.

In a district where so considerable a town as St. Helier is, there is a ready sale for almost every thing that grows on the farm, or in the orchard or garden, and the opportunity is of course taken by those, whom other business calls to the market, to bring a small load at least of whatever there is likely to be a good market for. The city residents, in anticipation of this, make their calculations to purchase at this time. In our climate there might be some objection to Saturday as a market day, lest the surplus articles should be damaged, but there, so cool is the weather, and so equable, that there are few things that would show material deterioration after a day or two in the market, if well taken care of.

Insular Isolation.

The isolation of an island may be so absolute, that it needs strong words to express it—like the "sinfulness of sin." There are some good things connected with it. Contagious diseases among cattle have never crossed the barrier of waters, according to the often repeated testimony of the veterinary inspector. There is the more reason for maintaining non-intercourse with the mainland, or permitting animals for beef or mutton to be imported, only under the closest veterinary inspection.

This is in strong contrast with the system, or lack of system, pursued in this country. When I came home, I brought with me nine head of Jerseys, purchased for Mr. Moses Y. Tilden. Great pains were taken to have them examined by veterinary surgeons, and to have certificates of their perfect health accompany the consular certificate of their being for breeding purposes. Not only so, but by special permission of the Privy Council, the steamer which brought them from the Islands was permitted to come alongside the steamer for New York, and trans-ship the stock without their putting foot on English soil. When they came to New York, not a question was asked about them. One of the butcher's sheep had died, and been thrown overboard a few days before, I presume from having choked itself with a piece of mangel belonging to my cattle. The quarantine officers came on board, chatted with the captain, and "cleared out." I presume they did not even know we had cattle on board, though they may have known it; certainly they did not know but that every one of them had foot and mouth disease. If they had examined their mouths, and found that they had no upper front teeth, I don't know what they would have said. A physician of my acquaintance was once greatly surprised to find that a cow had no upper incisors, and it is quite likely the lack of these might have been taken as evidence of some dreadful mouth malady, if not of "foot-and-mouth." The custom house officers never looked at the certificates of health, and I have them yet. That ship might have been a Pandora's box of evils to the cattle breeders of this country, for ought the authorities knew, and I might have spared myself great trouble, and no little expense incurred in order to demonstrate that

they were all right. A few days after, the Erin brought out a lot of Short-horns from England, for California, and these too were landed without any question as to whether they were sick or well.

Milk-Sickness.

The Islands are not, however, free from cattle maladies. The cows are of course just as liable to diseases, not contagious in their nature, as any are. Perhaps the most distressing of these ailments, is what is called milk-fever. There are different forms of it, but it occurs with them just about as it does with us, namely, attacking the best cows soon after calving. So far it baffles the skill of their veterinary surgeons, and of their "cow-doctors" of best repute. Some cows get well without, or in spite of, treatment, and many die. Old farmers told me, fairly with tears in their eyes, of the loss of this and that favorite cow by this disease. Is it because we milk too long?—because we feed too high?—because the cow is too fat? These and similar questions came up as the subject was discussed. And among some farmers the practice of shortening the feed some time before calving, had actually been adopted—but without definite results as regards milk-fever. Is it not curious how ready farmers are to believe they are feeding "too well" for the good of their stock; and there are no end of objections and forebodings of evil, if the traditions of the elders are transgressed.

I have been kindly remonstrated with for feeding up the small potatoes, called seed potatoes, and used as such in the region where I live), because it would dry up the cows. Indian-meal has the same reputation in some sections, and only a few weeks ago I read in the New York Tribune the statement of a farmer, who had demonstrated to his own satisfaction, that pumpkins fed to his cows had dried them up. Here are three kinds of food, famous for producing milk, each regarded as having the diametrically opposite tendency. Must we then reject all the observations and conclusions of practical men? No, indeed, but many of them must be taken with the "grain of allowance." A false or necessitated economy was father to the opposition to potatoes. The extraordinary fattening qualities of Indian-meal, probably suggested the idea of its drying up the milk. And in regard to pumpkins—pumpkin seeds are well known to be diuretic—it is quite likely that if the seeds be fed, a tendency to dry up the milk might have been observed. Now-a-days farmers usually remove the seeds before feeding pumpkins or squashes.

To return to the subject of milk-sickness. I found no one who could show that fat cows had it oftener than lean ones, that cows hard to dry up had it oftener or worse than those going dry three months, or that high-fed, forced cows were more likely to have the disease than others. It seems reasonable to suppose that an animal whose vital organs had been over-taxed, will be more liable to suffer from *any* malady than one in health. After all, it appears as if the healthiest cows were most liable to milk-sickness, and most likely to die. One thing, however, was generally agreed upon, which is, that the cow's bowels should be relaxed by such food as coarse bran, roots, or linseed-oil-cake. For my own part, I will add, that I consider the last named an invaluable article of diet for cows at calving time. It is highly strengthening, slightly laxative, and not in the least heating. Besides, I think a cow will always make the best and most natural disposition of the placenta. If it be removed, she is deprived of Nature's medicine, and the consequences may be bad. In my own practice I never remove it, and never have had "bad luck."

Are there too Many Farmers?

Just now there happens to be too much of almost everything that is produced by human labor. There is too much coal mined, the furnaces turn out too much iron; too much cotton and too much woolen cloth are woven; too much leather is made, and curiously enough, many people are complaining that there has been too much money made: indeed, some go so far as to declare that the excess in the manufacture of paper dollars is the very reason why there seems to be too much or too many of everything produced by labor. The farmer is no exception. He has too much wheat and corn, or at least there is so much of it to be sold that he cannot get a satisfactory price for his produce. It is the same with fruit, vegetables, cheese, butter, and beef; pork only seems to be a single exception. Are there then too many farmers, as some people seem to think? If so, it would seem that there are too many miners, spinners, weavers, tanners, builders, carpenters, merchants, clerks, and lawyers, as well; for all these people are complaining that their business is as bad or worse than the farmers declare their's to be. It can hardly be the case that there are too many people in the world. If there were too many of all other classes than farmers, one might well suppose that, as farmers are needed to supply others with food and materials for clothing, there would be more customers to purchase their produce, and that their number might be safely increased. The supposition that there are too many farmers may be abandoned as unfounded. Every farmer, who should leave his farm and go into other business, would find a worse state of things than he is endeavoring to leave. If one should sell his farm, and try to invest his money at interest, he would find that there were too many in that business also, and that safe and profitable investments are as difficult to find as high prices for corn or wheat. Under the present temporary condition of things, the farmers are the only class of people that are not too numerous. When their business happens to be poorer than usual, they do not find themselves suddenly discharged without wages, to starve or to subsist upon their store hoarded for such a "rainy day." On the contrary, the farmer has, or he may always have, a sufficiency of the necessaries of life, and most of its comforts, and although he may not have much money passing through his hands or be able to spend much in luxuries, yet his position is so vastly better than that of any other class of workers, that these naturally seek to become farmers, when their own business fails or times are hard. We have now before us numerous letters from persons who have hitherto worked in factories, or at various trades, asking us to advise them how they may invest their savings in a farm or a garden tract, and become independent of a manner of life that is full of "ups and downs" and serious reverses, which they believe a farmer's life to be free from. The fact is, few of us "see ourselves as others see us," and we are too apt to look too much upon the dark side of our own affairs, and the bright side of those of other people, instead of doing the reverse. It would make a great difference in our ideas of things, if farmers were to do this, and there would be fewer of them inclined to think or believe that there were too many of them in the country. As a curious coincidence, we notice the English farmers are inclined to think there are too many in their business there, and are disinclined to pay so high rents for their farms as they have heretofore been doing; and yet the English people are buying over 100 million bushels of wheat from foreign farmers every year. Perhaps they think there are too many farmers here for their profit. It might serve their purpose doubtless for a time, if we did not raise a bushel of wheat for export, but it could hardly better *our* circumstances. Out of our population there are six persons engaged in other industries to every one engaged in farming, and this ratio is increasing every year. Every year farmers are decreasing in proportion to the whole population, and if figures speak the truth, we cannot believe that there are too many farmers now, when there are relatively fewer than there have ever been before.

Hay Racks.

In March, when the last storms of departing winter prevent out-door work, and bring days of enforced leisure, an opportunity may be seized for preparing or repairing the hay or straw racks, for use in harvest time. We have several times previously described and illustrated these necessary appendages to the farm wagon, but every year new ideas occur, which lead to improvement in the old-fashioned racks. We here illustrate two kinds of hay-racks, which have been found more convenient in use than some of the old kinds. That shown at figure 1, consists of a frame made of scantlings, mortised together, and fitting upon the wagon after the box has been removed. Cross-pieces, which project over the wheels, are bolted to the frame, and to these one or two side boards are bolted. A few short, sharpened stakes are fixed into the sides of the frame, which help to hold the load, and prevent it from slipping off from the rack during the loading. A strong rack of this kind may be made to carry a very large load of hay. We have seen over 30 hundred-weight loaded upon one of them, and more might have been easily added to the load. The plan of building this rack is readily seen by studying the engraving. At fig. 2 is shown a rack made to fit upon a wagon body. When grain is hauled, much is sometimes lost through the rack, by shelling. This is almost always the case in hauling ripe oats, and always in drawing buckwheat. To avoid this loss, we have used a strong wagon-box of rough planks, fitted with iron sockets, bolted securely to the sides. Into these sockets were fitted, head and tail racks, as shown in the engraving. For the sides we procured natural crooks,

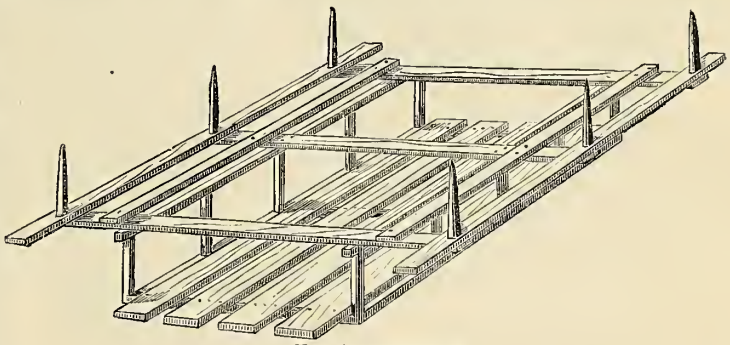


Fig. 1.—HAY-RACK.

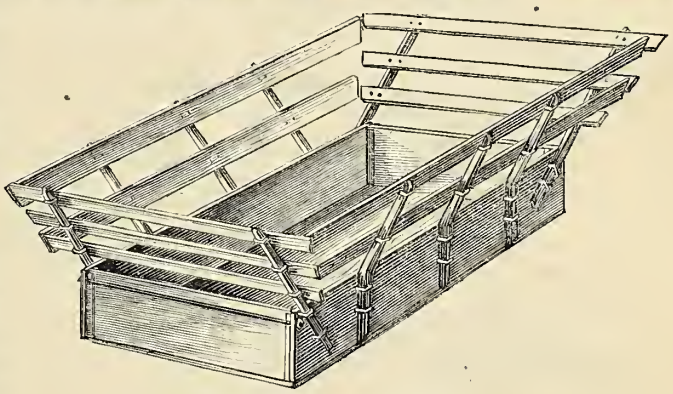


Fig. 2.—RACK FOR GRAIN.

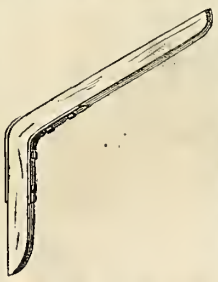


Fig. 3.—SUPPORT FOR RACK.

from which the bent pieces, shown at figure 3, were worked out. They were strengthened by iron plates on each side of the bend, as there shown. To these were bolted two or three boards, and the frames were then fitted into the sockets for use. By lengthening out the reach, and having the box twelve or fourteen feet long, a very large load may

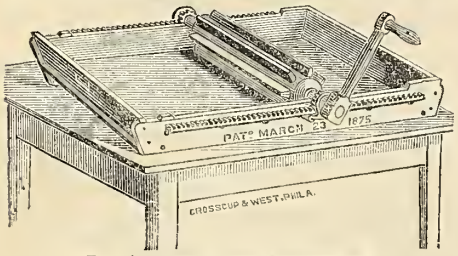


Fig. 1.—REED BUTTER-WORKER.

be taken. If thought best, in order to permit the team to turn readily, the box may be cut at the sides, so as to prevent the fore wheels from binding or being locked or cramped. The first mentioned of these racks, should be put together with carriage bolts and nuts, so that when the season is over, it can be taken apart and laid away in a small space. The second one may be taken apart, and laid aside in separate portions, occupying very little space, and in this lies not the least of their advantages.

Butter-Workers.

The hard work of the dairy is being rapidly transferred from the homestead to the factory, or

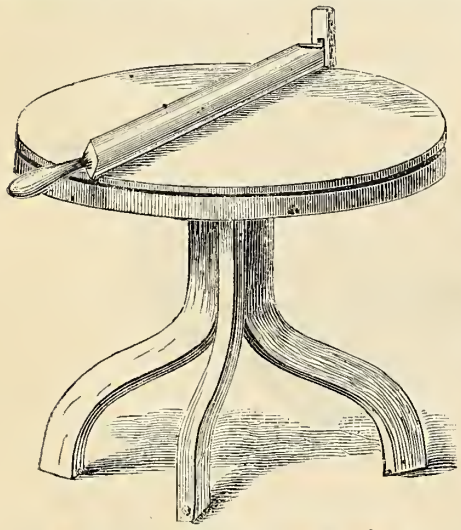


Fig. 2.—CALIFORNIA BUTTER-WORKER.

is becoming greatly lightened by the use of improved machinery. Animal-power in the smaller

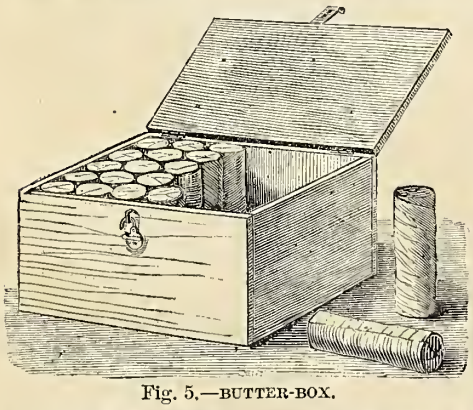


Fig. 5.—BUTTER-BOX.

dairies, and steam in the factories, perform the heavy labor of churning, and the working of the butter is now rendered easy by a great variety of contrivances, which get rid of the buttermilk, and mix the butter as well, at least, as it could be done by hand, and with a great saving of labor. Upon the proper working of the butter, depends to a very great extent its quality, flavor, and its ability to keep sweet for a long period, and the better this is done, the better will be the butter. Much butter is spoiled by bad working, and for the best meth-

Fig. 3.—BUTTER-KNIFE.

ods of working, a peculiar manipulation or "sleight of hand" is needed. The butter must be gashed, and squeezed, so as to provide an outlet for the buttermilk, and to force it out of the mass. But this must be accomplished without any drawing or plastering motion, by which the granular, or waxy, texture of the butter would be destroyed, and a greasy character given to it. The chopping action of the butter-ladle in the hands of the dairywoman, and the careful squeezing of the butter thus gashed into slices—both very laborious when done by hand—are now performed in the most perfect manner by several machines. One of these machines of more than ordinary usefulness, is shown in figure 1. It consists of a tray, and a traveling roller, which is furnished with several wings or radiating blades. The roller is mounted in a frame, which, as the handle is turned, works back and forth upon a metal rack, and carries the roller over the butter in the tray. The butter is cut and gashed by the wings or blades of the roller, and the butter-milk is squeezed out at the same time. If desired, water may be used to wash the butter. This machine is extensively used in Chester Co., Penn., and has been tested by some dairymen of our acquaintance, with satisfaction. It is known as the Reed butter-worker. A worker that is used in a large dairy in California, is shown in figure 2. This particular dairy is known as the Point Reyes' Ranche, and consists of a tract of over 45,000 acres of land, which juts out into the Pacific Ocean, being joined to the mainland by a narrow neck only. There are 3,000 cows upon this point, kept for butter-making. The tract is divided into seventeen farms, which, with the cows, are leased to tenants at a stated rent. One of these tenants has 300 cows. The dairies upon these farms are furnished by their owner with all the modern improvements. Among these is this butter-worker. This is a stout table of hard wood, standing upon three legs, which are screwed firmly to the floor. In the center of the table there is a socket. A revolving top is placed upon this table, and is kept in its position by means of a pivot in the center, which fits into the socket. At one side of the table there is a standard, which rises above the revolving plate. Into this standard fits the end of a sort of wooden knife, shown at figure 3, which has an oval or double-bladed form. The butter being placed upon the revolving portion of the table, is cut and squeezed with the lever until it is sufficiently worked, when it is salted and left for a time. After this, it is again worked, and pressed into molds, (fig. 4), or into cylindrical rolls, which are wrapped in muslin, and packed in a square box upon their ends, (figure 5). The molds are made of *lignum vitæ*, in the manner of a pair of bullet-molds. Each half being filled with the finished butter, the handles are forcibly squeezed together, and the butter is compressed firmly into a solid roll, which drops from the mold when it is opened. The mold is kept wetted with cold water during the operation. When the box is packed full, the lid, which fits close upon the ends of the rolls, is shut down and locked, and the butter is ready for market. Figure 6 represents a small knife of *lignum vitæ*, which is used to run around the inside of the milk pans, to separate the cream for skimming.

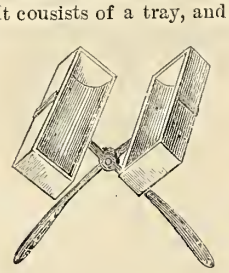


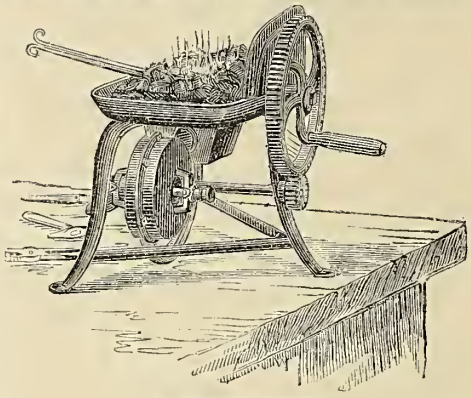
Fig. 4.—BUTTER-MOLD.

Fig. 6.—CREAM SEPARATOR.

The use of this simple little tool is to be recommended in every dairy, even if but one cow is kept, so that the uncleanly method of separating the cream with the forefinger, may be avoided. Such a knife can be easily whittled out from a piece of maple, birch, or ironwood, with a jack-knife, and should be kept clean and hung up in the dairy.

Portable Forges.

A portable forge, suitable for the farm workshop, is here illustrated. This has the merit of cheap-

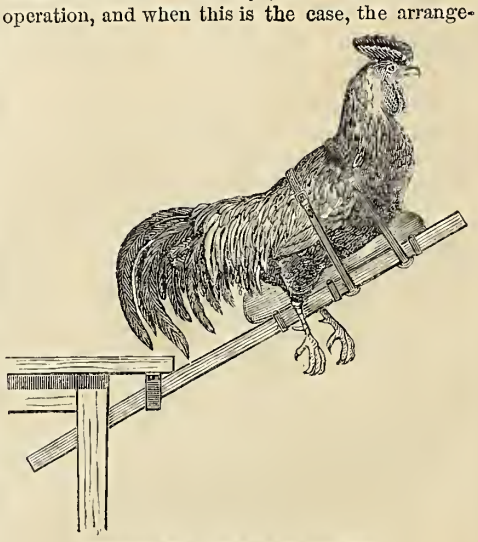


PORTABLE FORGE.

ness in cost, and of occupying but little space. It may be placed upon a box or a work-bench, and used with the greatest convenience. It stands upon legs only 13 inches high, and weighs but 50 lbs. The blast is worked by gearing, and is sufficiently strong to get up a heat that will melt inch iron in two minutes, or get a welding heat upon a 2½-inch bar in ten minutes. The bearings are made of bronze, and those of the fan are self-lubricating. The cost is only $16, and there are few machines so useful to the farmer, mechanic, or amateur, that costs so small a sum. In a communication from a farmer, referring to this forge, the writer says that he saved $10 in one day, last harvest, by having a small forge on his farm, which enabled him to repair a break in his mower, without loss of time. These forges are made by the Empire Forge Company, of Troy, N. Y., whose larger machines have been already described in the *American Agriculturist*.

Operating Table for Poultry.

There are occasions when it is found necessary to confine a fowl for the easy performance of some operation, and when this is the case, the arrange-



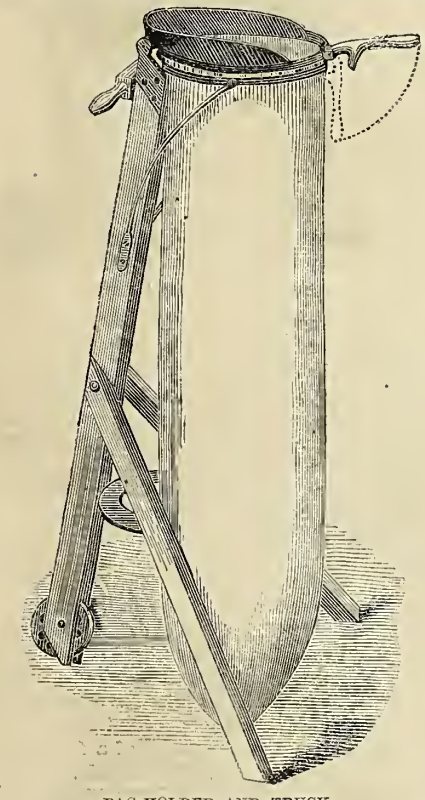
OPERATING TABLE FOR POULTRY.

ment shown in the accompanying engraving will be found very useful. It consists of a stout lath, such as a fence picket, upon which are fastened two cushions; one small one, which supports the rear of the bird, and one larger one upon which its breast may rest. A pair of straps, with buckles, which may be readily made of a pair of suspenders past their usefulness, or of some other soft material, are fastened to the underside of the lath by tacks. To use the affair, a loop of strap iron may

be screwed to the underside of the table, or a leather strap may be passed through two holes in the top of it, and one end of the lath is put through the loop, and made to rest firmly against the frame of the table. The bird may then be placed astride of the cushions, and strapped so as to confine the wings; or it may be placed upon its back, or side, and one wing only confined. In this way any position may be secured by which such operations as setting a broken leg or wing, trimming the feathers, washing, opening the crop to remove an engorgement, or caponizing, may be performed without any interference by the struggles of the bird.

A Combined Bag-Holder and Truck.

Being recently at a railroad depot, where a good deal of grain is received, we were much interested in a man filling some bags with wheat from a car, and trundling them away to a store-house. He used a bag-holder, which served also as a truck, upon which the filled bag could be wheeled away. We quickly sketched the bag-holder in our notebook, as a good thing to make known to our readers, not knowing then the name of the maker of it; but on our way home discovered in a catalogue of the Higganum Manufacturing Company, of Higganum, Conn., an illustration of the same holder and truck. We give our illustration here, which shows for itself the character of the bag-holder, and the method of using it. For use in grist-mills, and barns or granaries, this handy contrivance would be found to save considerable labor and time, as when the bag is filled, it may be wheeled away by taking hold of the handles at the top, and



BAG-HOLDER AND TRUCK.

making a one-wheeled truck of the machine; the bag rests between the projecting legs.

A Non-patented Barrel Header.

Not long since we saw in operation a useful contrivance for pressing the heads of apple or egg barrels into place. Both apples and eggs require to be packed very firmly to enable them to be transported in barrels with safety. Apples loosely packed in a barrel will come to market in a very badly bruised condition, and if the packing around eggs is not very firmly compressed, the eggs and packing change places or get mixed up, and it is the eggs, and not the packing, which then suffers. A barrel of eggs properly packed, with layers of chaff or oats an inch thick between the layers of eggs, and three inches at each end of the barrel, will bear to be compressed as much as three inches with safety; without this compression eggs are almost sure to be greatly damaged. A barrel of apples may fill the barrel to about two inches above the chime, and will bear to have the head brought down to its place. When barrels containing these perishable articles are thus packed, they may receive very rough usage without injury to the contents. The header referred to consists of a bar of half-inch square iron rod, with a large eye or loop at one end, and at the other end two diverging hooks which grasp the bottom of the barrel. The bar is bent to fit the curve of the barrel. When in use, the hooks are placed beneath the lower chime of the barrel, one end of a short lever is placed in the eye, and the lever rests upon a block, which is set upon the head of a barrel properly placed in position. A strap or cord, with a loop or stirrup at one end, is fastened to the other end of the lever. The foot is placed in the loop or stirrup, and the weight of the body thrown upon it brings the head of the barrel into its place; the hands being free, the hoops can be driven down tightly without the help of an assistant. Without the use of the cord and stirrup, two persons are required to head barrels, but with the aid of these the services of one can be dispensed with.

BARREL-HEADER.

To Mend a Broken Tug.

No one should go from home with a buggy or a wagon without a small coil of copper wire and a "*multum in parvo*" pocket-knife. This knife, as its name implies, has many things in a little space, and, amongst other useful things, has a contrivance for boring holes in leather straps. In case a strap or a leather trace breaks, while one is on a journey, and at a distance from any house, he would be in an awkward "fix" if without any means of repairing damages. With the copper wire and an implement for boring some holes, repairs can be made in a very few minutes. The ends of the broken strap or tug may be laid over each other or spliced; a few holes bored in the manner shown in fig. 1, and some stitches of wire passed through in the way known amongst the ladies as "back stitching." The ends of the wire are twisted together, and the job will be finished almost as quickly as this may be read. If a buckle breaks, or the tongue of the buckle is drawn through, and made useless, the end of the strap may be turned back over the loop of the buckle, and the wire passed through the holes in the strap, as shown in figure 2, and the ends fastened. If it is a chain that breaks, the next links may be brought together and wire wound around them in place of the broken link, which will make the chain serviceable until home is reached. In fact, the uses of a piece of wire are almost endless. Nothing holds a button upon one's working clothes so securely as a piece of wire, and once put on in this manner, there is never any call upon the women of the house at inconvenient times for

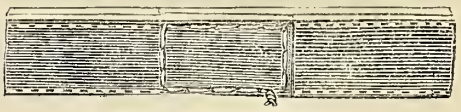


Fig. 1.—REPAIRING TUG.

thread and needle to replace it. The wire will pierce the cloth without any help, and nothing more is needed than to pass it through each hole of the button and twist the ends to secure them,

Fig. 2.—REPAIRING BUCKLE.

cutting them off close with the knife. There is scarcely any little thing that will be found of so great use about a farm, or a workshop, or in a mill, or even in a house, as a small stock of soft copper wire.

Smoke-Houses, and a Substitute.

When well done, smoking not only tends to preserve meat, but it imparts to it an agreeable and piquant flavor. To smoke meat well, there must be a convenient place in which to hang it, and a house so arranged that the meat may not be exposed to the heat, nor be liable to fall into the ashes. The smoke should be cold, or at least not so warm as to soften the fat of the meat. Probably no districts have a better reputation for their smoked hams, than Virginia, Maryland, and Southern Pennsylvania. The method of smoking meat is the same in each of these localities. The smoke-house is a tight building, raised either upon brick pillars, or upon a brick base, in such a way as to be perfectly safe against rats, and impenetrable to flies. There are two apartments: one above in which the meat is hung, and a lower one, in which the smoke is produced by the slow burning of hickory or oak chips, sawdust, or brush, or corn-cobs. A smoke-house that is very common in Virginia, is shown in figure 1. It is 16 feet high, and 12 to 14 feet square, with a wooden frame, covered with matched boards, the joints covered over with battens so closely as to make the inside as dark as

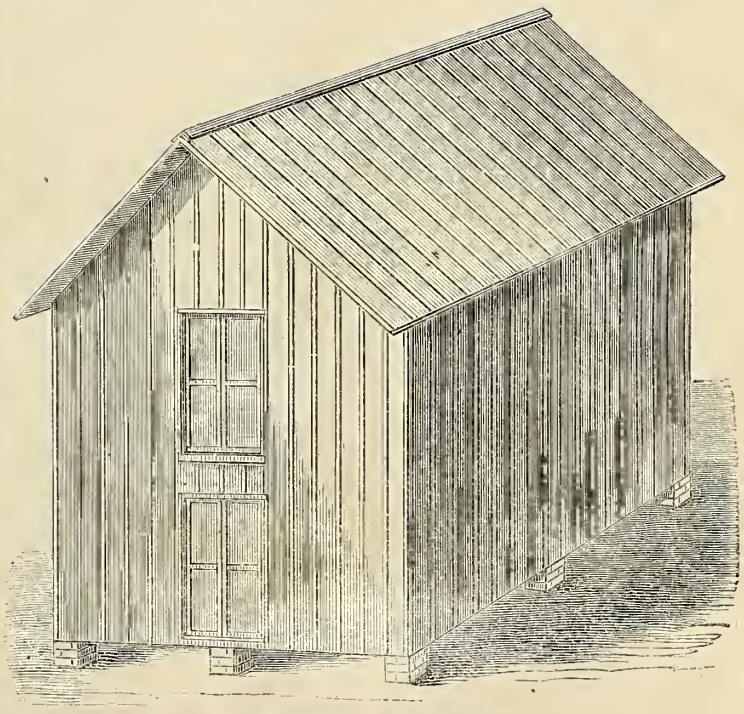


Fig. 1.—VIRGINIA SMOKE-HOUSE.

possible. The house is built upon brick pillars, a foot high, to prevent rats from gaining access to it. The lower floor is of inch tongue-and-grooved

boards, and the upper one of strips, half-an-inch thick, and four inches wide, placed on edge, and a quarter of an inch apart, so as to allow the smoke to pass through. The meat is hung around and across the upper apartment, and up to the peak of the roof, and is kept there, after having been sufficiently smoked, until it is wanted for use. There is a door to the meat-room, which cannot be reached without a ladder, which is always kept locked, as is

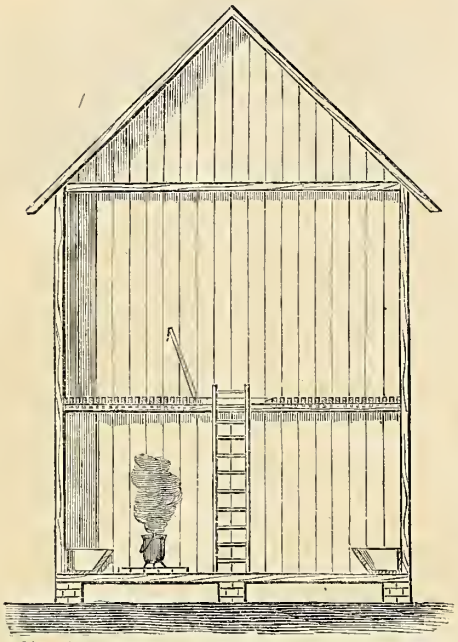


Fig. 2.—SECTION OF VIRGINIA SMOKE-HOUSE.

also the door below. In the lower apartment, there are sometimes troughs, two feet and a half wide, and the same in depth, in which meat may be salted. The section across the middle of the house, showing the two floors, the side troughs, and the iron pot in which the fire is made, is given in figure 2. It is a mistake to make too much fire at one time; a slow fire, which makes a cool, thick smoke, is much more effective than a hot one that consumes the wood rapidly, and gives less smoke. The fire pot is placed upon a few bricks, to prevent the floor from becoming charred. Figure 3 shows a smoke-house common in Maryland and Pennsylvania. This differs from the preceding one in being built upon a brick wall, and over a brick arch, through which a number of holes or spaces are left in the brick-work, for the smoke to pass through. Beneath the arch is the ash pit, and a door opens

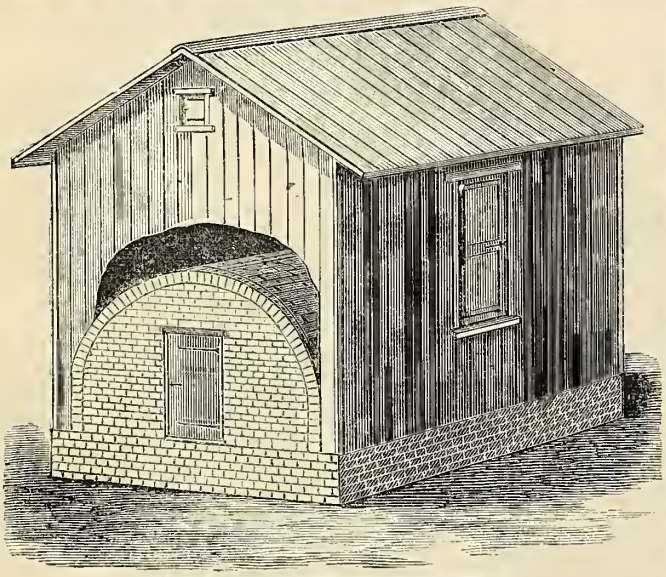


Fig. 3.—PENNSYLVANIA SMOKE-HOUSE.

into this, as shown in the engraving. The door to the meat-room can not be reached without a ladder, and should be kept locked.

It sometimes happens that one needs to smoke some hams or other meat, and no such smoke-houses are at hand. In these cases a large cask or barrel, as shown at figure 4, may prove a very good substitute. To make this effective, a small pit should be dug in the ground, and a flat stone or a brick placed across it, upon which the edge of the cask will rest. Half of the pit is beneath the barrel, and half of it outside. The head and bottom may be removed, or a hole may be cut in the bottom a little larger than the portion of the pit beneath the cask. The head is laid upon one side until the hams are hung upon cross sticks, which rest upon stakes, made to pass through holes bored in the sides of the cask, near the top. The head is then laid upon the cask, and covered with sacks to confine the smoke. Some coals are put into the pit outside of the cask, and the fire is fed with damp corn-cobs, hard wood chips, or fine brush, and the pit is covered with a flat stone, by which the fire may be regulated, and it is removed when necessary to add more fuel. This sort of a smoke-house is very convenient upon the prairies, or in the woods, where farmers have not the facilities or means for building a more permanent smoke-house.

Husking in the Field or Barn.

It is a question with many farmers whether it is better to husk corn in the field or in the barn, and many experiments have been made the past season to test this matter. It does not appear that these experiments have shown any decisive result either way. One farmer who has had his corn drawn to the barn and husked there, the stalks being put away in the mow at the same time, has concluded that with three men in the barn, he can husk as fast as the corn can be drawn with one team. The gain in time by reason of the greater comfort of doing the work under cover, he finds is equal to one-third. We have ourselves tried several plans as promising improvements upon the old one of husking in the field. The corn when cut has been tied up in small sheaves that could be easily handled with a hay fork and pitched rapidly upon a wagon. Before being bound, the sheaves lay and wilted half a day. They were then bound and shocked up much in the same way as small grain, with the buts wide apart to admit air. In this condition the stalks and corn cured very rapidly. The crop was then put away in the barn in the same manner as wheat or oats. It was husked at leisure, during the winter, the job not being finished until January. All the soft corn was moldy, and in some places one or two rats had got into the mow and had spoiled a good many bushels of corn. We never cared to repeat that experiment. Afterwards the corn was cut, bound, and shocked in the manner mentioned, and drawn to a shed near the corn-crib. Here a long bench of planks was fixed upon which the corn was husked as it was drawn. Each husker threw the bundle of stalks out of the shed to the rear through sliding windows, where they were stacked up. Each husker had a corn-basket, which, as it was full, was carried away by a boy and emptied into the crib, an empty basket being left in its place. Two men husked the corn from a field of 13 acres, which yielded over 800 bushels of shelled corn, in 9 days. The man and boy who hauled the corn had time enough to stack the stalks during the times that the team was waiting to get rid of their load. The total cost of hauling the crop, husking, cribbing, and stacking the stalks, was between 5 and 6 cents per bushel of corn, which was the cheapest husking we had ever had done. It certainly does seem that, at least upon eastern farms, corn-husking may be done in a more convenient, and cheaper manner, than kneeling upon the cold ground in the chilly November days with an occasional snow storm, or rain storm, as a change.

Cheaper Production is Higher Price.

If a bushel of wheat or a pair of shoes can be produced by one day's labor, and sold for a dollar, the dollar is the value of the day's labor. If we can, by improved methods of working, or greater skill or activity, produce two bushels of wheat, or two pairs of shoes, by a day's labor, and still sell them for a dollar each, the value of the labor is two dollars. We have then doubled the value of our labor, without increasing the cost of it; consequently if the cost of living remains the same, our profit is doubled. The shoemaker, and many other mechanics, have succeeded by the exercise of increased skill in their work, in thus doubling their product, without a corresponding decrease in the price of their goods. The farmer has not succeeded in doing so much as this, although by the use of drills, harvesters, and thrashing machines, it costs him less in labor to produce a bushel of wheat, than formerly. But the most laborious part of his work is not cheapened, nor is there any probability that it soon will be. Plowing and harrowing can not cost less for some years to come, than they now do. But the work may be made to cost less, practically, if we can make it more effective. If we plow an acre of barren soil, we lose our labor altogether, and the cost is exactly equal to the value of the labor expended, because there is no return.

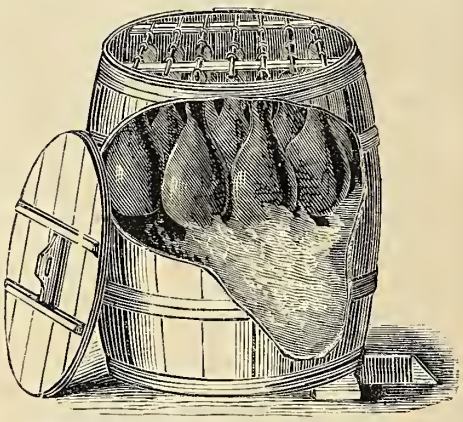


Fig. 4.—SUBSTITUTE FOR A SMOKE-HOUSE.

If we plow an acre of ground which produces a crop worth exactly the cost of the labor, the labor is paid for, but there is no profit. If the ground is rich enough to produce a crop double the value of the labor expended, the profit is equal to 100 per cent upon the expenditure. The way to better profits very clearly lies in the direction of enriching the soil. This is the whole secret. What we then produce will cost but half what it formerly did, and we therefore get a double price for our crop, which merely represents so much labor. There is no fear that this method will be worked out, nor danger that the yield of grain will be doubled in a very short time. There is every certainty that those few farmers who will succeed in making their farms produce double the former crops, will not be forced to receive a less price for what they have to sell. They have every opportunity then to double their income in the course of a few years, if they will only take the right methods. How can this be done? It can not be done without working for it with brains as well as with the hands, and becoming more skillful and painstaking in the use of what means may be made available, and exercising some patience, for it cannot be done at once.

A NEW DODGE.—The usual practice of advertising "estrays" in the local papers, has given occasion for a new mode of swindling. A person "dressed as a farmer," (with a few straws in his hair, and chaff in his beard perhaps), gets the description of the "stray" from the paper, and visits the person who has taken it up. Then he says "he has come a long distance, that the critter is hard to drive, and rather than have the trouble to take it so far home, he will sell it at half its value." If the bait is swallowed, by and by the true owner comes around, and the cow or horse has to be given up.

Hollow Walls for Houses.

A double wall, with an air space of two or three inches in the center, is a greater obstacle to the passage of heat (and consequently of cold) than a solid wall, although that be much thicker. Whenever it is desirable to have a house, greenhouse, or other building, impervious to heat or cold, or dampness, it should be built with hollow walls.

Fig. 1.—HOLLOW WALL OF BRICK.

There are many methods of securing this hollow air space in walls. In brick, stone, or concrete houses, it is made by what is known as "furring": that is, fastening strips of wood upon the inner side of the walls, and lathing and plastering upon them. In frame-houses, the spaces are made by lining the inside of the house with paper, felt, or board sheathing, upon which the lath and plaster is laid, by building up brick set on edge with mortar between the lathing and the outside covering. But where the wall can be built hollow, it is far the best plan to do so. A hollow brick-wall may be built as in the section illustrated at figure 1.

Fig. 2.—HOLLOW WALL OF EDGING STRIPS.

There are two walls, each half a brick thick, with a space of four inches between them. This takes very little more material than a wall of one brick thick, but is stronger when tied in the manner hereafter described, and is warmer and drier than greater thickness solid wall. The outside and inside walls are tied together by cross bricks placed here and there, and laid two inches upon each wall. Thus there is a space of two inches upon the wall left at each end of the "tie" brick. This is filled in by a chip taken from the end of a brick, and not quite two inches thick, so that when it is laid in the empty space, there is half an inch or so between it and the end of the tie brick. This breaks the continuity of the outside and the inside of the wall, and makes the air space as nearly perfect as possible. There should be a sufficient number of "tie" bricks built in the wall, to bind it together substantially. This may safely be left to the judgment of the mason, but under ordinary circumstances, a tie to every three courses of brick, and for every three or four feet in length, would be ample for strength.

Some years ago we saw a very ingenious method of building a wooden house with double walls out of what is a waste material, and which can be procured for nothing in those localities where there are saw-mills. When boards are sawn from the

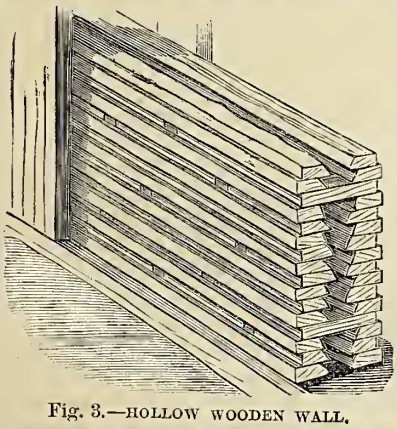


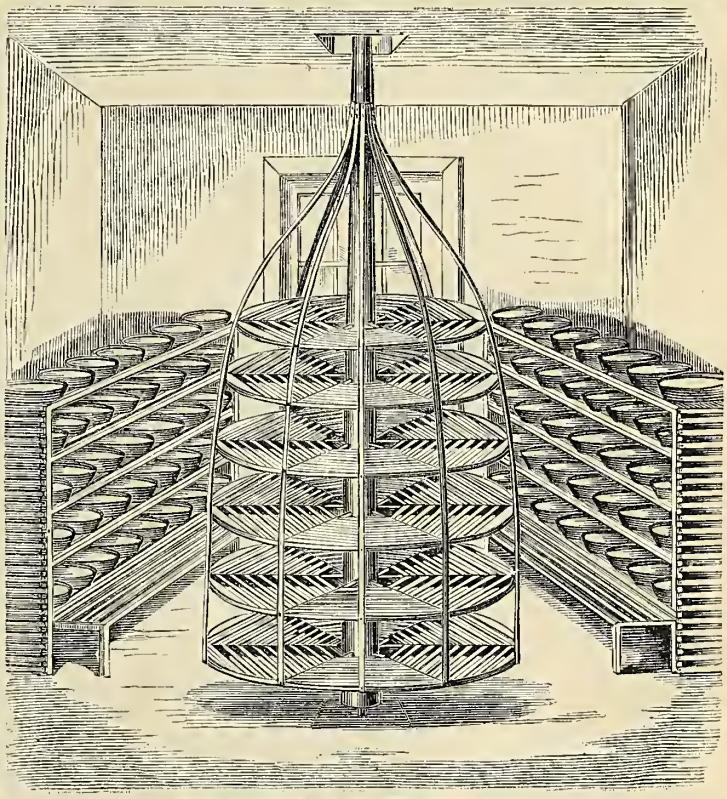
Fig. 3.—HOLLOW WOODEN WALL.

logs, the edges of some of them are rough and irregular. These edges are sawn off in order to make the boards fit for sale and use. These "edgings" are generally thrown out of saw-mills that are run by water, or in which the saw-dust suffices for the fuel, and may be had in many places for carting. These strips may be used in building by first laying the sills and lower beams in the usual manner, but not making any mortises for the studs. Then a strip is laid upon the sill with the smooth edge even with the outside, and nailed down to it with tenpenny nails, and another strip is nailed in the same way even with the inside edge. The ends of the strips are sawn off square. Then other strips are nailed upon these, until eighteen or twenty inches high. Then cross-pieces are nailed on to bind the walls together. Thus there are two walls, smooth upon the outsides and uneven inside, and with an air space, wider or narrower as the case may be, in between them. Figure 2 shows the character of the wall. The ends of the strips are overlapped at the corners. But to save the cost of lathing the walls, the strips may be laid so that the edge of every alternate one projects half an inch beyond the one next to it, both upon the inside and outside, if desired. This leaves a rough surface, upon which the plaster may be directly laid without any lath. The window and door-frames are built in as the wall is laid, and when the top of the first story is reached, the joists are laid and built in, so that the whole is remarkably solid. The outside may be covered with dressed boards, or plastered and "rough cast." As the work can be done by any person who can drive a nail, a house of this kind, in some localities, will cost but very little, and no skilled labor is needed but to make the doors and windows, and to fit the roof.

An Awl for Mending Harness.

A convenient awl for repairing harness may be made in the following manner. Take a broad-pointed awl of the common sort, grind the point to an angle, and cut with a fine file, or what is better, a fine saw for metals, such as is furnished with the common scroll-sawing machine for brackets, a narrow slot or groove, deep enough to carry a waxed end. The cut should be made as shown in the engraving. This groove should be smooth upon the edges, so as not to cut the thread. To work with this awl, it is forced through the leather in the usual manner, and a waxed thread is drawn through, so that half of it is upon each side of the article to be stitched. The awl is then withdrawn. It is then pushed through where the next hole should come, and the thread upon the near side is carried through with it, as before. The awl is then withdrawn, leaving a loop of the thread upon the further side of the leather or strap. The other thread is passed through the loop, and the looped thread is drawn back again, so that the two threads are crossed about the center of the hole. Then this is continued, until the work is finished. It will be noticed that the sewing is in fact like that of a sewing machine, and after a little practice it will be found that the stitching may be done without dropping the first thread from the awl, but the thread will be drawn back again, after the other one has been put through the loop, and in drawing the threads tight, the awl will be slipped along the first thread, to get sufficient slack for the sewing. To make the thread for sewing harness, six or eight strands of shoemaker's hemp are gathered into one cord, and well waxed. The loose cord is then rubbed over the knee in one way with the palm of the left hand, while one end is held in the right hand. As the cord is twisted by this rubbing, it is rolled up into a ball, or gathered into a loop by the fingers of the right hand, until it is all twisted, when it is again waxed. In this manner of sewing, no bristles are needed for the ends of the threads, as it is not necessary to pass it through the holes in the leather.

HARNESS AWL.



MILK SHELVES AT BEACON FARM DAIRY.

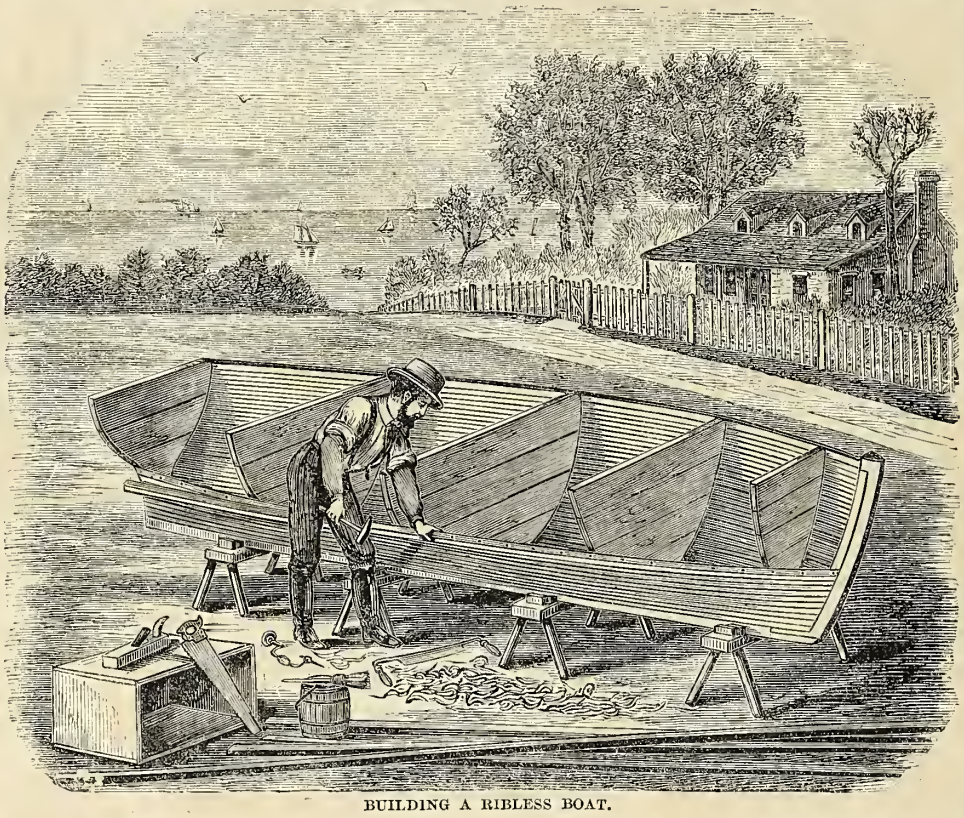
Revolving Milk Shelves for a Dairy.

On a recent visit to Beacon Farm, we saw a new arrangement of shelves in the dairy, which has been drawn and engraved for the benefit of our readers. The whole affair is so well shown in the illustration, that little description is needed. It consists of an eight-sided central shaft, provided with an iron pin at the bottom, which works in a socket in the floor beneath; the upper part is carried through the ventilator in the upper floor. Eight arms are mortised into the shaft to support the shelves, of which there are six. Strips are carried from the upper part of the shaft over the edges of the shelves, as a further support to them. The shelves, which are about 15 inches apart, are made of lattice-work, thus furnishing ventilation to the bottoms of the pans. The lowest shelf is six feet in diameter, and about two feet above the floor. The whole frame work revolves upon the pin at the bottom, and is readily moved around as the pans of milk are placed upon the shelves. This arrangement makes a great economy of space. The pans are not shown upon the shelves, so that the structure may be seen, although at our visit every shelf was fully occupied. The side shelves seen in the engraving have been before described; they too are very economical of space. The whole of the shelves are well painted in pure white.

CATTLE KILLED BY RIFLE BULLETS.—A singular case of lead poisoning has occurred on a field in Scotland, which adjoins a rifle range. Four cows which pastured in the field died, and on searching for the cause, a quantity of spent bullets from the rifle range were found in their stomachs. As rifle shooting is now becoming popular and frequent in this country, those farmers whose cattle graze upon or near the ranges, should exercise caution.

Building Ribless Boats.

A method of building boats, by which ribs are dispensed with, has recently been brought into use for coast, lake, and river craft. These boats are light, swift, strong, and cheap. They have been found to be remarkably good sea boats, and to stand rough weather without shipping water. By this method of building, fishermen and others, who use boats, can construct their own at their leisure, and in many cases become independent of the skill of the professional boat builder. The materials needed are clear pine boards, one inch thick, a keel of oak or elm, a stem and stern-post of the same timber, and some galvanized iron nails. For small boats, the boards and keel should be the whole length of the boat intended to be built, for boats over 16 feet in length, splices may be made without injuring the strength; if they are properly put together. The materials having been procured, a frame or a set of tressels are made, and the keel is fitted to them in the usual manner, by the means of cleats on each side, and wedges. The stem and stern-post are then fitted to the keel in the usual manner, the joints being made water-tight by means of layers of freshly tarred brown paper laid between the pieces, or by the use of a coating of thick white lead and oil. Previously to being fitted together, the sides of the keel, stem, and stern-post are deeply grooved to receive the first strip of planking. The boards are then ripped into strips one inch, or an inch and a half wide, according to the desired strength of the boat. For rough work, such as fishing with nets, or dredging, an inch and a half would be a proper width for the strips. The ripping may be done with one of the hand circular sawing machines, or at a saw-mill, with great rapidity. The first strip is then nailed to the keel, a coating of tar or white lead having first been given to the groove in the keel already prepared for it. The broad side of the strip is laid next to the keel. A set of molds, corresponding to the lines or form of the boat, are cut out of inch boards, and tacked to the keel in the manner shown in the engraving, with the help of cleats upon each side. Then one strip after another is nailed to each preceding one, and the shell of the boat is built up of these strips. Each strip is trimmed down at the ends in a proper manner, with a draw knife, or a plane, and as each one is nailed to the preceding one, some of the tar or white lead is brushed over it, to make the joint tight and close. A sufficient number of nails is used to hold the strips firmly together, and the heads are driven down level with the surface of each strip The work proceeds in this manner, forming the strips as each is fitted, bending them to the shape of the molds, and nailing one alternately upon each side, so that the molds are not displaced by the spring of the timber. When the sides of the boat are completed, the fender and gunwales are fitted, and bolted to them to strengthen them, and cleats are bolted inside for the seats to rest upon. The molds are now removed, and the boat consists of a solid shell an inch and a half thick, with not a nail visible excepting on the top strip, and conforming exactly in shape to the model. To give extra strength, short pieces of the strips are nailed diagonally across the inside, from side to side, and across the keel. In this manner a great deal of additional stiffness and strength is given to the boat. A boat of this kind is easily repaired when injured, by cutting out the broken part, and inserting pieces of the strips. For a larger boat, which requires a deck, the strips are wider and thicker, or a diagonal lining may be put into it; knees are bolted to the sides, and the beams to the knees, the deck being laid upon the beams. The method is applicable to boats of all sizes, and for all purposes, and its cheapness and convenience are rapidly bringing it into favor. If the material is ready for use, two men can finish a large boat in two weeks, and a small one in one week. These boats being very light and buoyant, considerable ballast will be necessary to make them steady enough in case sails are used.



BUILDING A RIBLESS BOAT.

The Paint Root—Its Effects on Pigs.

Those who study the native plants of the northern states, know as an exceedingly rare and local one, *Lachnanthes tinctoria;* the first or generic name means *woolly flower*, and the second, or specific name, *tinctoria*, has reference to its dyeing or coloring properties. In some works "Red-root" is given as the common name of this plant, but as this same name is, in various parts of the country, applied to at least three other plants, it is preferable to accept that by which this is known in the southern states, where it is most abundant, and call it Paint-root. The engraving gives an idea of the general appearance of the plant; the stem, which here is cut for convenience, is, in favorable localities, two to three feet high; the leaves, about half as long as the stem, are narrow, the lower ones clasping one another like those of an Iris; the flowers are in a dense cluster at the top of the stem, and being woolly without, and of a dingy yellow color within, cannot be called showy. While the minute structure of the flowers is of interest to the botanist, we will not describe them further than to say that they are six-parted, and have three stamens and a single style. The plant belongs to the Blood-wort family, (*Hæmodoraceæ*), of which we have but few examples in this country, and among familiar plants it is most closely related to the Amaryllis family, to which the Jonquils, Narcissuses, and others of our spring garden flowers belong. The Paint-root contains an orange-colored juice in its stems, and especially in its fibrous roots, which are red, and are said to yield a dye similar to that of madder, but we can not find that they have ever been largely used for this purpose. This plant is very abundant in the southern states, from Florida northward, in sandy swamps near the coast, and is common in the pine barrens of New Jersey. Many years ago, while with a party of botanists exploring a little known portion of Rhode Island, where within a restricted area the plants are more like those of North Carolina than those of New England, the late Prof. Bailey of West Point, who was one of the party, fairly shouted with surprise when this plant was met with; he said he should not have been more astonished had he met with a Palmetto growing wild in that locality, which is not far from Kingston, R. I., and so far as is known, its northern limit.

We have described and figured this plant, not solely because it is of botanical interest, but for the reason that, insignificant though it may appear, it has an important bearing upon the agriculture of many of the southern states. Those who have traveled much in the Atlantic southern states, from Virginia to Florida, are aware that black pigs are much more common than white ones; the reason given for this preference for black pigs has been that they do better under a hot climate than white ones, the same as negroes are better suited to such conditions than white people. While it appears that the skin of black pigs is less affected by the intense heat of the sun than that of white ones, this is by no means the only reason, or the main one, why dark colored swine are more common throughout the southern Atlantic states than the light ones. So far as this portion of the country is concerned, it turns out that the plant in question, the Paint-root, is at the bottom of the great preponderance of black over white pigs, as the white ones, if allowed free access to the Paint-root, are soon killed off, while the black ones can eat it with impunity and even fatten upon it. Darwin, in that most remarkable book, "Plants and Animals Under Domestication," quotes this case to show that

characters of trifling value, such as that of color, may be of importance in natural selection, in adapting animals or plants to a locality, as they are known to be in artificial selection by man. The immunity from adverse influences of certain dark colored fruits is pointed out by him, and that of black pigs in this case, is not the only instance in which there is a direct relation between the color of animals and their adaptation to certain localities, and their susceptibility to certain poisons. White horses in eastern Prussia, if they eat mildewed vetches, soon have ulcers break out upon the skin, and even those which are spotted with white, have every place upon which there are white hairs, affected by troublesome sores, while horses with no white spots are not injured. In a part of Sicily there are only black sheep, as the white ones are all killed off by a species of St. John's-Wort, (*Hypericum*), which grows there, and other instances are given. The case of the black pigs in this country is quoted by Darwin on the authority of that acute observer, the late Dr. Jeffries Wyman. Upon this point we are able to present very recent testimony from Dr. P. Stotesbury, of Clinch Co., Ga., one of the Executive Committee of the Georgia State Agricultural Society, a gentleman who takes a most lively interest in every product of his state, and to whom we were largely indebted for our account of the Wire-grass published in January last. Dr. S. writes us that his own experience, and that of his neighbors, is, that while black pigs are unharmed by feeding on the Paint-root, white ones are invariably injured by it; the white pigs, if allowed to feed freely upon it, become lame, with every appearance of "founder;" ultimately their hoofs drop off, and deformed hoofs may grow out; in the meanwhile the pigs become permanently blind. If when blindness and lameness are first noticed in young pigs, they are removed to a pasture where they cannot get at the root, they soon recover; and even old ones that have become incurably blind will take on fat if given other food, and their flesh is eaten without ill effects. Dr. S. states that the color of the excrement and the urine of the pigs will show at once if they have fed upon the Paint-root; and that the animals, when killed, show by the color of the enveloping membrane of the bone, (*periosteum*), the coloring effects of this food.

PAINT ROOT.—(*Lachnanthes tinctoria.*)

CAPE IVY.—(*Senecio macroglossus.*)

A New Climber.—The Cape Ivy.

"Plants, Henry A. Dreer, Philadelphia," was on the outside of the parcel, and we made haste to inspect the inside, knowing that when a parcel comes from this well-known establishment, it is likely to contain something desirable. We took out a new geranium or two, of which great things are spoken, and then—an Ivy. Mr. Dreer knows our fondness for odd forms of Ivy, but what should induce him to send this tiny specimen, and by mail too, which, though a respectable looking Ivy, presented nothing very remarkable, was for the moment a puzzle, until we touched the leaves, when we found that the plant was no Ivy at all!—"Fairly taken in"—yes, we own that the eye did deceive us, but the touch did not, and we were quite willing to be deceived, for here was the very plant for which we had been longing. We had read in the recent European journals of *Senecio macroglossus;* were proposing to send for it, and here it was right at hand! By this time every flower-growing reader of the *American Agriculturist* knows the German or Parlor Ivy; that quick-growing, tender vine, now so popular for window and basket culture, and so useful for soon covering a screen in the garden. The German Ivy, as we have stated before, is not an Ivy proper at all, but belongs to the great composite family, it is *Senecio scandens*, and own brother to the Groundsel, a common weed, to the Tassel-flower of the gardens, (sometimes called *Cacalia*), and to that golden yellow Squaw-weed, or Golden Rag-wort, (*Senecio aureus*), which is everywhere so bright, especially in wet places, in spring. This new plant has received in Europe the name of Cape Ivy, and it well distinguishes it from the other climber, which, though called German, comes from the same locality—South Africa. After growing the little plant from Mr. Dreer for a few weeks, we have had an engraving made of it, which, while the leaves are not so large as they would be on a stronger plant, gives a good idea of their shape and ivy-like appearance. While the color of the better known German Ivy is of a light and rather yellowish green, the leaves of this have the dark and blackish green so peculiar to true Ivy, and which gives to this newer one a richness which the other lacks; besides this, the leaves have much more substance than those of the other, though they are still soft, and have not the rigidity of those of true Ivy. Some months ago we made the statement that, though we had in 1867 figured the German Ivy in flower, it rarely bloomed; since

then several have informed us that it flowered with them, and one friend sent us abundant specimens. The flowers in the "German" are in large clusters of small heads which have no ray-florets, and are only about a quarter of an inch across, while the Cape Ivy has but one or two heads at the ends of the flowering branches, which have showy rays, and are two inches or more across. We have not seen the plant in flower, but the "Garden" (London), some months ago, gave a small cut of the flowers, and we borrow some from that engraving to place with our own; while the leaves are shown of the natural size that they are upon our small plant, the detached flowers here given are much reduced. The "Garden" and other English papers say that this Cape Ivy is quite as well suited to house culture as the other; if it proves to be as manageable as the German Ivy, it must become very popular, on account of its finer color and closer resemblance to Ivy. N. B. It very rarely happens that we describe a plant of any kind, but we receive letters from persons in various parts of the country, asking us to send them plants or seeds, and we are obliged to repeat from time to time, that we do not keep or sell plants or seeds. If a plant is rare, we state the source whence we obtained it; if no mention of this kind is made, and the plant is a cultivated one, then it may be had from any of the regular seedsmen or florists.

Notes from the Pines.

It is pleasant to know that one's readers do not forget him, and as there are quite a number who take an interest in my off-hand talk about garden matters that may not have read the first one, allow me to say that at the outset I promised to write only from "time to time." This is mentioned in acknowledgment of the kindly inquiries from several who ask after "the man at 'The Pines,'"—Inveterate letter writers, when they take up a sheet, do not stop when they get through, but feeling that they must cover the paper, after they have quite written out, fill up with talk about the weather. Unlike these, I begin with the weather...."There never was such a winter," is the common remark. These do not look at the records; I have no data at hand, but I am quite sure that we have had two very much such winters since 1860.....The great mortality among trees, evergreen and deciduous, for the past few years has been due to the fact, that the soil was very dry when winter set in, and trees dried out, quite as much as they froze out. It is several years since trees were so well prepared for a hard winter, as they were last fall; the wood ripened well in the genial autumn weather, and the ground was abundantly moist, or as the old people say, "the springs were filled up before winter set in." Still, up to the last of January we have had but few days of really cold weather; the river is open, and for a great part of the time the ground has either not been frozen at all, or but a mere crust of a few inches. Still, as we can not foretell the weather, I took especial care with my young evergreens. Fewer of the fine evergreens would be put down as tender, were they properly cared for while yet small. If a tree is of slow growth above ground, it is very sure to make a slow root-growth, and even hardy evergreens are helped by protecting them until, as the gardeners say, they get "a good hold of the soil." I think that in

Protecting Young Evergreens

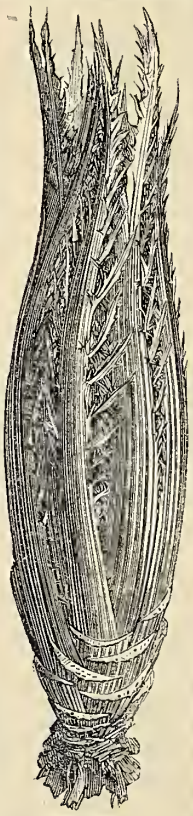
on light ground like mine, I do quite as much good in keeping the soil from drying out, as I do in protecting the plants from severe cold. I have found no better protection for young evergreen or deciduous trees, than the boughs of pine and cedar stuck in the ground around them, or laid among them; these protect the young plants from the cutting winds, prevent them from damage by heavy snow-falls, and yet allow a circulation of air among them. But the supply of this material with me is limited, and having trimmed "The Pines" all they then needed, I last year resorted to a substitute, which answered admirably. Brush from the woods (the much branched loppings from deciduous trees cut for fire-wood), was laid around and among the young evergreens, then some long marsh-hay upon this, and to keep the hay from being blown away, some of the straighter pieces of brush were laid upon that. In this way I kept *Osmanthus ilicifolius*, *Skimmia Japonica*, and other usually tender things through the severe colds of last winter..... We do not yet by any means know

The Northern Limits

of a number of our native southern plants. Though last winter (74–75) was so hard upon most things, the Carolina Jessamine (*Gelsemium*), and the Carolina Pink-root (*Spigelia*) came out all right, and *Erythrina herbacea*, a part of which was left out to die, obstinately persisted in living.....If there is any vegetable product, eaten by any one, anywhere, that can be grown in this country, I endeavor to try it. This desire to be practically acquainted with all esculent plants, sometimes brings to the table dishes, which make, as the play-bills say, their "first and only appearance;" after great trouble in procuring seeds, and care in cultivating, the products often find the cows, the pigs, or the chickens their only patrons. On the other hand, these new introductions sometimes, like serial stories, are "to be continued." Of late I have turned my attention to old "novelties." Ever since I have had a garden, I have wanted a bed of

Sea Kale.

All the European works and journals highly praise the Sea-Kale, (*Crambe maritima*). Gardening friends, who were brought up in the British Isles, have often asked me, "Have you Sea-Kale?"—"No."—"Ah, that is the best of all, you should have that."—"Have *you* it?"—"No."—And this has happened a number of times. I have tried seeds from every seedsman, year after year; I sowed them in the pods, and shelled them out, I have sowed them in hot-bed, and in the open ground—but never a plant did I get from the seed. I became, as it were, a *crambe-maniac*. Last fall, in writing to an English friend, with whom I exchange flowering plants, I begged him, if the United Kingdom could furnish them, to send me a dozen roots of Sea-Kale, and added in my desperation—"at any price." My friend sent some root-cuttings from his own garden, and from these I have a half-dozen or so of plants, which will give me a start for the long wished for bed. I mention this merely to show the difficulties that one meets with, who wishes to do anything out of the ordinary way. Another old novelty is



CARDOON.

Cardoon,

which, though it has been grown in European gardens for over two centuries, is scarcely known here; indeed, I never saw it in any other garden than ours, and doubt if any of your readers who have not lived in Europe, ever saw or tasted it. This plant is own brother to the true or Globe Artichoke, rarely cultivated, at least at the north, for the scales of its enormous thistle-like heads. In the Cardoon the leaf-stalk is the part eaten, just as in celery. The plant is a biennial, used in the first year, and is only kept until the second year when it is desired to raise seeds. It looks like an enormous gray thistle; its leaves, three to four feet long, are so cut and divided, that a single specimen would make a showy lawn plant. The seeds are sown in rich soil in May, putting in three or four seeds at intervals of 18 inches; when well up, all but one plant in a place are pulled out, and these are kept well cultivated. In September, when they are blanched, this is done in various ways, some merely tying the leaf-stalks closely together, and earthing up the same as celery, but a much neater method is to closely wind the cluster of leaf-stalks—or head, as we call it in celery—with a straw band; having no suitable straw to twist, we adopted another plan; the leaves being tied up closely together, were wound around with stiff brown paper, and earthed up, the object of the paper being to keep the earth out of the heart. The blanching went on fairly, considering it was not started until late, and when real freezing weather came on, the plants were taken up and stood in boxes of earth in the cellar. There are several varieties cultivated in Europe, some with very prickly, and others with smooth leaves; ours was of the kind called "Large Solid," and an ugly customer to handle, on account of its prickles. Removing the outer leaves, there is in the center a heart of blanched leaf-stalks, and undeveloped leaves, as large round as one's arm, and of the appearance shown in the engraving. To prepare for cooking, the stalks are separated, the spines trimmed from the edges, and peeled; we have cooked them in only one way—cut into inch pieces, stewed tender, and served with a cream sauce, the same as we do celery or salsify. I hardly know what to compare it to, but Cardoon was voted "very good." A friend who has lived in Europe, says that it is very fine cooked with cheese, after the manner of maccaroni.

Roses from Seed.

A correspondent complains that the seedsmen give him no information about raising roses from the seed. There are very few people in this country who will take the time and trouble to raise seedling roses, and these need no instruction. Some growers obtain seed by crossing desirable varieties in the usual manner, but the majority sow seed from good sorts, knowing the tendency to vary, and take their chances. The first requisite is thoroughly ripened seed; the next is that it should never become dry. Some prepare a rich, light soil in a frame, remove the seed from the hips, or berries, sow them in drills, or broadcast, and cover lightly; the frame is left open until the soil is frozen hard, and then covered with shutters to keep out mice. The seedlings will appear when the weather gets warm. Another plan is to sow in boxes as soon as ripe, and set them under the stage of the greenhouse, where they will be kept moist; when the plants begin to appear, they must be brought to the light. If the seeds cannot be sown until spring, they must be kept in the hips and mixed with sand; if allowed to get dry, they will not grow until the second or third year, if at all. Those who have seeds which they have allowed to dry, can yet mix them with earth, and allow them to freeze and thaw. Some seedlings bloom the first year, others not until the second or third. The flower is not so good the first year of blooming as it is the second or third. With the best success, the great majority of the seedlings are worthless. Raising seedling roses is an occupation which many of our amateur gardeners might find interesting, with the possible chance of now and then securing a prize.

Manures for the Garden.—"We have no stable manure, and cannot buy it, what shall we use on the garden?" is the question which comes to us several times a week, not only from those who have private gardens, but from market gardeners all over the country. Night-soil is a good substitute for a while, but it does not seem to do so well used continuously. Of the commercial manures, Peruvian guano, when pure, is the best, and near the coast, as cheap as any. Next in order are pure fine bone, dried blood, and a good phosphate. Our best gardeners use these at the rate of 1,200 to 2,000 lbs. to the acre, broadcast, or from 200 to 300 lbs. to the plants in hills. Either of these concentrated fertilizers should be composted for several weeks

before using, with wood's earth, (leaf-mold), dried muck, or good dry garden soil, one part of the fertilizer, thoroughly broken up if lumpy, and three of the dividing material are to be thoroughly mixed in a dry place under cover, and shoveled over two or three times at intervals of a week, and then put in barrels or boxes and kept dry until wanted for use. If there is a brewery anywhere within five miles, it will pay to buy spent hops, if they can be had at the cost of stable manure; they ferment very rapidly, and will need turning, and if disposed to get too hot, may be mixed with some earth. Ashes are useful, leached or unleached, but are not to be mixed with, or applied at the same time with, the above named fertilizers. We have seen no neighborhood and no place, (our own included), where all the resources were made use of. Wherever there is a manufacture that uses bones, ivory, hair, whalebone, or other animal matter, except tanned leather, there are useful waste substances to be had. Slaughter-house offal, soap-boilers' waste, the dead horses and other animals of a town, street sweepings, especially of paved streets, should all be looked after. Near the sea-coast and the great lakes, unmarketable fish, and fish offal are available, and make excellent manure. How many of those who complain of a scarcity of manures, save all the wastes of the family? We know how difficult it is to have this properly attended to, but we also know that it can be done. The house wastes, washing water, chamber slops, dish-water, and all liquid matters, may be run into a tank as the basis of liquid manure, a matter much neglected in this country, or they may be turned upon absorbing material in a heap, or better, in a pit made for the purpose; dried muck or peat, leaf-mold from the woods, leaves, or sods, may be used. In most localities the road-sides and out-of-the-way places afford an abundance of turf, which, when dried, makes an excellent absorbent, and the fine roots with which it is filled, rot into an excellent manure. But all composts require time; for present needs some commercial fertilizer must be bought. Peruvian guano, fine bone, superphosphate, dried blood, or fish guano, if good of their kind, though they differ in price, are of about equal value, *i. e.*, it takes enough more of the cheaper fertilizer to produce the same effect, to bring its cost per acre up to that of Peruvian guano. Of course some "fertilizers" are nearly worthless, and this general statement is based upon the supposition that those named are intrinsically worth the price asked for them. We can make only this general reply to the recent letters of many anxious gardeners, and moreover advise them to study carefully the articles by Prof. Atwater, on Fertilizers, which are now in course of publication.

Blackberries in Indiana in 1875.

BY STEELE BROTHERS, LA PORTE, IND.

We sent you last winter some notes on Blackberries in 1874. Though our statement of facts then given were disputed by some, we made no reply, preferring to wait until we could speak from another year's experience. This year the Blackberry crop of La Porte Co. may be said to have been a total failure. Even the wild berries were very scarce. The Kittatinny, Wilson's Early, and New Rochelle, or Lawton, were killed to the snow line. From two rows of Wilson's Early, that last year yielded ten bushels, we picked less than half a bushel this year. The Snyder on our place, all one-year-old bushes, was killed to the ground. Some other patches leaved out and blossomed, and set fruit, but did not ripen half a crop. A professional man in the city, who is a successful amateur gardener, told us that his Snyders were killed to the snow line, and that he had grubbed them out by the roots. We went around toward the last of the blackberry season to examine some patches of the Snyder, and see how they had done. In the first patch we visited, fully two-thirds of the canes had dried up before the berries were grown, without ripening a single one. On the canes that still lived, the fruit was so small as to be almost worthless. The next patch was somewhat sheltered by a double row of evergreens on the north, and this was not quite so badly injured. On the south end, farthest from the wind-break, about half the canes were dead. On the north they were better, but still the fruit was very small. The past season here was wet, and very favorable for small fruit. Strawberries and raspberries did remarkably well. Our Wilson's Early blackberries, growing on branches near the ground, and protected by the snow during the winter, were as large and fine as ever. All the Snyders we saw this year, both on the branches and in market, were not more than half the usual size. We are not prejudiced against the Snyder, in fact we set out some more young plants ourselves this year, for still another trial. But we wish to prove our former assertion, that it is not *perfectly* hardy. And also to caution persons against investing heavily in any fruit before they have tested it thoroughly, or its hardiness has been fully proven in their locality.

Plant an Apple Orchard this Spring.

We want more apple orchards in all the older states. The old trees, once so bountiful, are bearing less, and dying every year. On many farms no successors are provided for. We have occasionally a surplus of apples, as in 1874, when the orchard does not pay much. But there is a compensation to the fruit-grower, even in these years of exceptional abundance. The cheapness of apples introduces them into many families, where they are generally used only as a luxury. They are so wholesome and enjoyable, that they become a necessity, and are more largely purchased in subsequent years, when they bring double prices. In 1874 apples sold for $1.50 per barrel. In 1875 they sold for four dollars a barrel. We know of a case in which a family laid in, in 1874, 16 barrels; in 1875, the price being so much higher, the same sum being allowed for apples, the supply was but six barrels. If apples can be raised at a dollar a barrel, and pay expenses, the farmer who furnished this family, made eight dollars in his trade of 1874, and eighteen the past season. Thrifty families soon become accustomed to apples, and they take their place with flour, meat, and butter, among the necessary family supplies, and the whole crop is taken, even in abundant years, at prices that pay something. This is what the fruit grower wants, steady paying prices for all that he can raise every year, rather than extravagant profits, which will induce everybody to rush into his specialty. Apples are, on the whole, as likely to be profitable as any fruit a farmer can invest in at the present time, with the prospect of making money out of them for the next thirty years. They keep better than almost any other fruit, and in all the northern half of the country, they can be had, in the fresh state, with very little difficulty, every day in the year. Our soil and climate are admirably adapted to this fruit. It grows in the greatest beauty and perfection, and American apples command very high prices in the English markets. They are already a profitable article of export, and this business has as substantial a basis for increase, as the export of American cheese to European markets. The idea that our climate has changed, is a fiction. Apples grow in our older states in as great perfection as they ever did, if the orchards are properly cared for. They will not grow so well on worn out pastures, as on virgin soil. But we find, to-day, on soils that are fed and cultivated, apple trees so vigorous and fruitful, that nothing more can be asked. Nor do we take any stock in the idea that the old varieties are running out. The Roxbury Russet has been in the country from very near its first settlement, and in the east, the trees are as vigorous and hardy, and the fruit as perfect as they ever were. As a long keeping standard variety, there is no better selection for this region. Plant an orchard this spring. Plant only standard varieties that are known to do well in your neighborhood, and let the varieties be few, and nine-tenths of them the long keepers. Late winter apples can be sold eight months in the year. They almost always bring extra prices in the spring. We know of farmers who have never lost faith in this crop, and are reaping golden harvests from orchards planted twenty years ago. First, plant an orchard. Second, take care of it. CONNECTICUT.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Prescribing for the Sick.

I have sometimes been called upon by neighbors to give some advice about the care of persons who were suffering from pains of some kind, and who hardly liked to summon a doctor. If those who come to me knew what medicine to give, or if they had some undoubted panacea in the house, they would not ask for my advice, I presume. But I never have any medicines, and never want any. Neither do I know much about particular diseases. There are a few things which every one should know about curing diseases—and the same rules apply generally to the prevention of disease. When I am called upon for help, I ask, "are the feet warm?"—and usually they are not. This, then, must be corrected as soon as possible. You can hardly trust an ignorant woman's report on this point, so common is it for women to go habitually with cold feet in the winter, calling them warm, perhaps, unless they actually ache with cold. Neither can you trust a sick child's report of its feet, and if you would do your best for the patient, feel of its feet yourself. Not only warm its feet, but *see that the whole body has a comfortable degree of warmth.* This is necessary whatever may be the disease. If the body, or any part of it, is hot and dry, cool it. Usually cloths wet with clean soft water are most available for this purpose. An equally important inquiry is concerning the state of the bowels. A Swede mother came to me one Tuesday afternoon, in great anxiety about her child, four or five years of age. I asked, "how are her bowels?"—"Well, I don't know," she answered, "for she has not had a passage of the bowels since Saturday!" I lent her my syringe, with instructions as to its use, for nothing but feverishness and pain could be expected while the waste matter of the system was retained in the body. This rule, "keep the bowels open," like the previous one in respect to a comfortable degree of warmth for the whole body, applies in *every case* of sickness, no matter what may be the disease.

I know I am only repeating what has been said editorially and by other contributors to this journal, when I say that medicine does not cure sick folks. It may give some assistance, but Nature herself works with all her might to prevent, and also to cure, sickness, or to restore to health any injured part of the body. We have only to work in harmony with her. For this reason we seek to maintain an equable circulation of the blood throughout the body by warming that which is too cool, and cooling that which is too warm. For this reason we seek to keep open every means of exit for the waste and poisonous matter which the body has to throw off constantly in its processes of repair and growth. This makes necessary not only an open condition of the bowels, but an open condition of the pores of the skin. Sweatings, or "sweats," are well in their place, when the pores are closed on account of cold, but a sick person's profuse perspiration ought to be followed by some kind of a bath, carefully given so as not to chill the patient, in order to wash away the effete matter which the sick body has poured, with the perspiration, through its innumerable pores. This should be done in a warm room, if possible, and in cool weather only a small part of the body should be exposed at once. When one arm has been washed and dried, the other may be bathed, and so on—a part at a time.

Improper eating seems to be the cause of much of the ailments for which I am called to prescribe. Of course the over-worked stomach ought to rest, and with it the whole body. But working people can not lie by on account of illness, if they have

strength to crawl about, and so they think they must "take something." There is a good deal in a name, and when people are in much pain, of course they want a "pain-killer"! Outside or inside, no matter!—kill the pain at once. So they seem to think, and in ignorance take anything which recommends itself as able to relieve their suffering. When our little girl pulled a heavy piece of iron from the table upon her foot, crushing it so that we thought she would be unable to use it for a long time, her suffering was extreme.

"We ought to have some 'pain-killer' in the house!" exclaimed a member of the family who was as ignorant of the component parts, and especial powers, of that medicine as I am myself.

"What for?" I asked, and he replied, "the child never can bear such pain long. It is horrible."

But we set to work with cold water, pouring it constantly upon the bruised part for about an hour. Relief began immediately, and the child was unwilling to have any cessation of the bath until the pain was all gone. It seemed almost a miracle to see that little girl running about on both feet in less than two hours after the accident, and never afterward to hear another word of complaint about the badly bruised foot. Nor was there ever afterward any hint in our house of the need of a "pain-killer" or other patent medicines. Vigorous rubbing is often better than water to relieve pain.

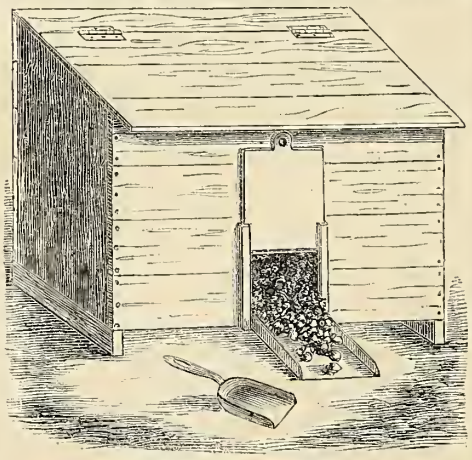
When the body is suffering on account of any obstruction, or injury, it is unfair to burden the stomach with unnecessary labor. Food easy of digestion should be selected, like well-cooked gruel, graham mush, or nice toast, dressed with sweet cream. Often an entire fast for one or two meals, with rest from labor, is the best thing for restoration to health. Most of us are too ignorant to attempt to treat a very sick person without the advice of a physician. Our neighbors thought us very presumptious when I was taken quite ill last winter, because we did not call a doctor. Indeed we were just on the point of doing so, in order to learn what was the matter with me, when we became sure that it was *pneumonia*, or lung-fever. We had no difficulty then in treating the case by simple nursing, using hot flannels or cool compresses, as instinct called for either to relieve pain. Medicines were advised by kind-hearted neighbors, but none were taken, nor even food, until the fever had abated and appetite returned. This little sickness of two or three weeks cost us not less than forty dollars in loss of time to my husband and myself, though there was no outlay for extra help or physician's attendance. So I am more sure than ever that sickness does not pay, and that it is a mother's duty to take care of herself as well as of her children.

Sunday Dinners Quickly Prepared.

A kind sister, helpfully inclined, writes me as follows: "I've had it on my mind for several weeks to write you something about Sunday dinners. You know when there is a family of five or six persons, more or less, and all want to go to the morning service, and stay to Sunday School, their appetites are pretty well sharpened by the time they get home, especially if there is a ride of two or three miles. I have experimented in various ways that we may have our dinner as soon as possible after getting home, or each one begins to help himself, which causes much confusion and spoils the meal. I find that by leaving the tea-kettle on the stove, and filled, with a little fire, the water is in a condition to boil quickly, and mush is soon prepared. In cold weather nothing is better than oyster soup, which requires but a few minutes cooking. A good meal is quickly prepared by having a chicken made ready overnight by dressing and stuffing, and then it is ready to put into the oven when the family sit down to breakfast. It requires little care, and is nicely browned by church time, and keeps warm in the oven until wanted for dinner. I find it a great help to have potatoes ready to warm over. Often meat is boiled or roasted on Saturday, which relishes well cold. A rice pudding, made without eggs, and left in the oven is nice with sugar and cream." It is easy, by taking thought, especially a day or two before, to so provide that Sunday shall be, not only to the family, but to the help a "day of rest."

A Bin for Coal.

An unfortunately too common manner of keeping fuel, whether coal or wood, by those who live in the country, is to have it in a pile out of doors, and unsheltered. In snowy weather the fuel is dug out from beneath a snow-drift, and in rainy weather it is brought in saturated with water, in either case making it very disagreeable and untidy in a well ordered kitchen. Indeed, to see a pile of fuel in this condition in the back yard, rather forcibly indicates that there is an untidy kitchen within doors. Fuel should always be under cover. Coal may be very well kept in a neat bin, which will still be neat, although made of rough materials. A packing-box of sufficient size, cut sloping at the top, and furnished with a lid, will make an excellent coal-bin; or it may be made of rough or dressed boards, and painted. It should be raised a few inches from the ground, by being placed upon stout posts, or a few bricks, and the top should be of such a hight that coal may be shoveled directly into it from a wagon-box. A sliding-door should be made in the front, with a small, sloping platform, from which to shovel up the coal which escapes when the door is lifted. The door should be kept closed when not in use, in order that coal may not be scattered about. If shed-room is scarce, the bin may be kept near the back door, but it would always be better to keep it, when possible, under

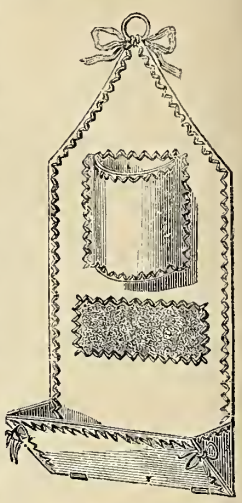


CONVENIENT COAL-BIN.

cover. The engraving shows the shape and proportions of a very convenient coal-bin. If wood or coal can not be reached without going out of doors, then the kitchen should be provided with a coal or wood box, as the case may be, and it should be made the especial business of some one, to see every morning that it contains a full day's supply.

A Convenient Match-Holder.

There is nothing in a house for which it is more desirable to have a proper place than matches. When one wants a match in the dark and has to hunt around for it, upsetting and breaking several things in the attempt, and then finally finds it, it is apt to be rubbed upon the first object that comes in the way, whether it be the hard finished or the papered wall, or the door or the window frame, and when an ugly scratch has been made, the burned stump of the match is very likely to be thrown upon the carpet. As a remedy for the annoyances attendant upon having matches "lying around loose," we suggest that a neat match-holder be made and hung in every room wherever matches may be needed in a hurry. They may be hung up in the kitchen, the dining-room, the parlors, halls, and every other room in the house, not forgetting even the cellar, and they should be regularly replenished and emptied of the stumps every sweeping day. We give here an illustration of a method of making a neat holder for matches. It may be made of stout card-board, cut into proper shape and bound with narrow ribbon. The pocket for the matches is made of a piece of the board curved and sewn on the frame with colored silk. A piece of sand-paper is glued below the pocket, and bordered around with ribbon, and this serves to rub the match upon. Beneath the sand-paper is a tray to hold the stumps. This is fastened to the frame by two hinges of narrow ribbon, and to the ends by pieces of ribbon which are tied in small bow-knots. By loosening these knots, the front of the tray falls down, and the burned ends are caught in the hand and removed. These holders may be made very ornamental, and for those who use gas, if made double or cylindrical, they may be hung beneath a chandelier, and the matches needed to light the gas will always be at hand. A dozen of match-holders would not be too much for comfort in almost any house.—[The above suggestion comes from a friend, to whom we are often indebted for household items; we would add that the furnishing stores have cast-iron boxes, that are better suited to the kitchen and such places.—Ed.]



MATCH-HOLDER.

Making the Best of It.

BY AN OLD TRAVELER

The extension lounge in the February, together with other articles of home-made furniture published from time to time in former numbers of the *American Agriculturist*, bring to mind an experience of many years ago, when this was almost the only furniture that I saw, for some three years.

Some years "before the war" it came in the way of my duties to visit a great many of the military posts on the far western frontier, where civilization was left far to the rear, and in front were the savage tribes of Indians, or the scarcely less savage half-breed Mexicans. These "posts" were in some cases mud, (adobe), barracks; in others, rude structures of poles set upright and chinked in with mud, and quite rarely log or rude frame houses, but in all cases exceedingly rude quarters. In spite of the rough life to be encountered, it was often the case that officers' wives, (bless their devoted hearts), accompanied their husbands, and when there were two or three wives at a post, it was spoken of as "society." In going from post to post, and stopping at some a few days, and at others for weeks, I had a fair chance to observe this kind of life, and notice how even one woman exercised an influence not only over the officers, but the men, and how different the whole tone at a post where there lived but one woman, was from other posts where, as was often the case, there was none. The younger officers were less rude where there was a woman, and the common soldiers would fairly worship her, and try in every way to do something for the captain's or "luftennant's" wife, and be amply repaid by a pleasant word. I also noticed the different dispositions of these wives, and the ways in which they accepted their rude lot and adapted themselves to their changed style of living. In an evening call upon some, I would be first treated to a long apology for the miserable quarters; how differently they lived at Fortress Monroe, Newport Barracks, Washington, or some other post. Did I know so and so in Washington?—the whole conversation showing discontent. A visit to another officer's quarters showed the room fitted up with great neatness and comfort; the wife was so glad I had come, as I might tell her about some curious stones she had picked up near the post, and she had collected some globular forms of cactus for mantle ornaments; I must taste some preserves she had made from the wild currants that grow near the

creek; and did I think that radishes would grow there, for Lieut. — was so fond of them. This lady had quite fallen in with her new mode of life, and managed to find a daily pleasure in it, and though she could grace the society of the older posts, she found too many duties on the frontier to allow her time for repining, and there was so much to interest her in the present, that her conversation rarely rarely run upon past pleasures. I am happy to say that the majority of the officers' wives on the frontier were of the last described class. The great distance of many of these posts from all ordinary routes of travel, made the transportation by wagons cost from 25 cents to $1.25 for every pound of material brought to them; furniture of most kinds was quite out of the question, yet rooms were often neatly, even handsomely furnished through the ingenuity of these excellent wives. We recollect a marked instance of this, in which Mrs. Col. W., with an admirable foresight, had all the effects they were to bring from "the states" packed in boxes of uniform sizes. Three of these boxes, laid one upon another, with their open tops outward, and properly curtained and draped, formed a useful bureau; others put upon legs and the edges covered with some proper material, made a "china closet," though the ware was mostly of tin, and the Col.'s books were thoughtfully sent out in boxes, which, placed one upon another, made as useful a book-case as need be. Lumber at all these posts is exceedingly rare, but these ingenious ladies would turn the boxes, barrels, and kegs from the commissary's and quartermaster's department to a great variety of uses, and what would otherwise go to waste, appeared as ottomans, foot-stools, and various other conveniences. I have seen most comfortable easy-chairs made from casks, and a lounge made with a pole frame-work, across which split barrel staves were nailed, to make a comfortable spring seat. All this was done where it was a matter of necessity, this or nothing; but there are many cases where the same ingenuity can construct household furniture from cheap materials which will answer all the uses of expensive articles, and save a considerable outlay.

Household Notes and Queries.

Under this head we propose to keep up a sort of "intelligence office" for housekeepers, where questions may be asked and answered; where short items may find a place and useful "scraps" may be saved.

Pies often have their juices cooked out; Mrs. J. A. Williams, of Wisconsin, prevents this by having some water handy, and when the pie is filled, she wets the edge of the lower crust, puts on the upper crust, and pinches the two together where they come in contact.

Keeping Eggs.—"J. L. T.," Middletown, Ohio, has kept eggs for the past 20 years thus: Paper is cut in pieces of the proper size, and each egg is wrapped up, the paper being folded closely around it and twisted firmly at the *large end;* the eggs are then packed in a vessel with the *small ends* down, and kept as cold as possible without freezing. The eggs packed in Sept. to Nov., keep until April.

Wanted, a good recipe for rye-bread. In our experience the trouble with rye and Indian bread is due to the difficulty of getting rye *meal;* that sold in the stores is bolted too fine; we cannot say how it is with bread of clear rye. *Another:* a recipe for ginger snaps, snaps that will *snap*, is asked for.

Tea Stains on linen are what Mrs. H. A. V. would like to remove, and she would also like to know how to use chloride of lime to remove mildew. The numerous inquiries that we have of late received as to removing stains from articles of clothing and furniture, and concerning the repair and renovation of various household articles is a good sign; it shows that our people are studying the art of saving, and this is a matter in which we shall gladly aid. In regard to stains in general, we had already prepared some notes on the subject, which we hope to give when there is room, but we answer this by itself. All fruit stains and all ordinary vegetable stains, including mildew, may be removed by the use of chloride of potash; this, (like chloride of lime), is not a proper chemical name, but a name by which it is known in the shops; it is also called Javelle water. It has the same bleaching qualities as chloride of lime, and is much preferable to that, as the lime makes the materials harsh. Wet the mildew and tea stains with this for a few minutes before they go into the wash; rinse thoroughly, and wash as usual.

Javelle Water is sold at most drug stores, but it is easily and much more cheaply made. Take 1 lb. chloride of lime, 2 lbs. pearlash, and sufficient water. Saleratus, (not soda), will answer, but not so well as pearlash. Put the chloride of lime in a jar with 1 gallon of water, adding the water gradually at first, and mashing the lumps with a stick to get all thoroughly mixed; stir thoroughly and let stand for a day or two; pour off the liquid from the sediment, no matter if it is a little cloudy; wash out the jar and return the liquid; dissolve the pearlash in hot water, about 3 pints, and add this to the liquid in the jar; let stand until clear, and pour off, keeping it in a bottle or a jug for use. A teacupful of this added to a boiler of cotton or linen goods, bleaches them finely. It should not be used too often, and then special care should be given to rinsing, or the materials may be weakened.

Restoring Gilt Picture Frames.—"M. P. B.," It is difficult to say unless we know what kind of a frame. Many frames called gilt, have no gold leaf on them; they are first covered with the vastly cheaper silver leaf, and then lacquered. Lacquer is a varnish made from light colored gums dissolved in alcohol and colored with tumeric. This laid on over the silver, gives it the color of gold. If the frames are really covered with gold-leaf, it will be better to have them regilded; if they are cheap frames, they can be improved by a coat of lacquer, first carefully removing all dust and specks.

The Uses of Buttermilk.

BY MISS A. D. WALKER, MORRIS CO., N. J.

In our farm-home we make great use of buttermilk, and the following recipes have been well tested. We often use fresh buttermilk in mixing bread, and find it increases the lightness and whiteness. Buckwheat cakes are not considered very wholesome, and we have almost discarded them.

Griddle Cakes are made with buttermilk, one quart; baking soda and salt, each, one even tablespoonful; one teacupful of Indian meal, and five of wheat flour. Cakes made in this way, will, if the rule is followed, be tender, light, and excellent. To make muffins we leave out the Indian meal, and bake in muffin rings. "What, muffins without eggs?" some will ask. Yes, and if you try them you will like them, as the buttermilk makes them very light and puffy.

Indian Cake, or pone, as it is sometimes called, makes a delightful breakfast dish. Our method is as follows: 1 quart of buttermilk, 4 teacupfuls of Indian meal, 2 of wheat flour, 4 tablespoonfuls of molasses, or brown sugar, 1 even tablespoonful each of soda and salt. Bake in a quick oven. This rule makes two handsome cakes. It is eaten warm, with butter. The same batter we prepare for muffins, makes excellent fritters, if fried in hot lard.

BOYS & GIRLS' COLUMNS.

No. 448.—A Prefix Puzzle.—*By Frank.* Prefix each letter of the alphabet, (excepting I, Q, and X,) not in regular order, to its required object in this picture, using no object or letter more than once, and obtain:

1. Property.
2. Used in chess.
3. To injure.
4. A kind of nut.
5. A fault.
6. A girdle.
7. Complete.
8. Cold.
9. A glimpse.
10. A discordant sound.
11. Exposed.
12. Layers.
13. A rapid current of water.
14. Limited.
15. Mode of treating.
16. Closed.
17. A common superlative.
18. A musical instrument.
19. A military command.
20. A flower.
21. A kind of boat.
22. An animal.
23. A story.

Answers to be sent to Aunt [Sue.

The Doctor's Talks—About Trouble in a Bird's Nest.

"Birds in their little nests agree," says the song, which is often quoted when children are disposed to quarrel. It is generally true that the little things do agree in their nests, but it sometimes happens that they do not, and

HOW A YOUNG CUCKOO BEHAVES.

our picture, which was drawn by a lady in England, and which tells what she saw, shows that, sometimes at least, there may even be quarrelsome times in a bird's nest. You have probably all read or heard about the Cuckoo. Many of your child's stories and your songs, have come from England—the mother country—and many of you have heard about the Cuckoo, as a very early spring bird, who "Sings as she flies; she brings us good tidings, and tells us no lies."—But the English Cuckoo is a very unpleasant bird after all; the English people may be glad to hear its voice "cuck-oo—cuck-oo," because it tells them that the winter is over, and that spring has come. The Cuckoo as an early spring bird, is mentioned in very early history, and is even spoken of in the Bible. But though it is a well known bird, it is a very mean one. It very rarely, if ever, builds a nest of its own (some say it does sometimes build a nest), but the female bird goes and lays its eggs in the nest of some other bird. When the Cuckoo does this, she very often chooses the nest of a much smaller bird, and the poor mother of the nest goes on and hatches out the egg of the Cuckoo. When the young Cuckoo is hatched, then trouble begins. Birds in this case do not "in their little nests agree." The young Cuckoo, very soon after it is hatched, and even before it gets its eyes open, begins to feel that while the nest is large enough for one, it is not large enough for but one, and that one is itself. So the blind and featherless creature begins to work around; if it feels any eggs, it somehow manages to push them over the side of the nest; if it feels a young bird, it works its body under the poor thing, and then by backing and pushing, manages to get the bird, which really belongs there, out of the nest; the little soft featherless creature falls to the ground and is killed; or if the nest is low, and it is not killed, it is unable to get back again, but is so chilled that it dies. It has been denied that the young Cuckoo pushed the birds out of the nest, but several have seen it done, the lady who drew this picture for the "London Field," among others, having seen it, and after the bird was put back into the nest, have seen it put out a second time. It sometimes happens that two Cuckoos' eggs are laid in the same nest, and then they show no brotherly love, but the one which is the weakest must go overboard, leaving the stronger to have the nest all to itself, and of course all the food that the poor mother of the nest would have brought to her own young. "How mean," you will say, "I am glad we have no Cuckoos in this country."—But you would be too fast; we have Cuckoos here, but they build their own nests, and behave like most other birds. Still, we have a very common bird, which is not a Cuckoo at all, that has just the same ways, and instead of building a nest of its own, goes prowling about, and when it finds a chance, leaves its egg in the nest of some other bird. This bird is known as the Cowbird, Cow-Blackbird, and the Cow-Bunting; you must have often seen it in the spring, for it is found in small flocks in the pastures all over the country. The male bird is black, with its head and neck purplish-brown, while the female is of a grayish-brown, and lighter below. The female selects the nests of the smaller birds, such as the warblers, the sparrows, the small thrushes, and others, and deposits her egg when the proper owner of the nest is away. The egg of this bird is grayish-white, with small reddish dots all over the surface, and often there are blotches of brown at the larger end. If you find an egg of this kind in a nest, where there other and smaller eggs of another color, you will be safe in throwing this out as having no business there. If one of the other birds finds an egg of this kind in her nest, she is in great trouble, for she appears to know that it has no right to be there; some of the birds, finding the stranger egg in their nest, get together new building materials, sticks, hay, moss, or whatever it may be, and build another nest right over it. But it often happens that this is not done, and the mother of the nest sits upon the strange egg as well as her own. Now it happens that this Cowbird's egg hatches sooner than most other eggs, and the bird from it is not only larger than the others, but comes sooner, and can at once begin to push out the eggs, or birds, if there be any, and then have the whole nest to itself. It is said that while the owner of the nest tries to get rid of the strange egg, she will, if this is once hatched, give the young Cowbird all the care that she would have given her own. "It's just mean—that's what it is," you will say.—Do not be in a hurry to find fault with the works of the Creator. You must remember that even the most learned do not know everything, and those who have studied birds all their lives, find that they have yet much to learn, even about our common ones. It may be that when we come to learn all about this habit of the Cowbird, we shall find that there is a good reason why it does in this way, and perhaps think it is a beautiful and wonderful arrangement. Let us wait, says THE DOCTOR.

Aunt Sue's Chats.

THE SEVEN WONDERS OF THE WORLD DESCRIBED.

MARY D.—Never "be ashamed to ask" for information, dear. I don't believe Mr. "Charlie" could have told you "out of his own head" what were "the Seven Wonders of the World," unless he had just happened to have learned all about them. They were—1. The Pyramids of Egypt; 2. The Hanging Gardens of Babylon; 3. The Temple of Diana at Ephesus; 4. The Statue of Jupiter in the Temple at Athens; 5. The Tomb of Mausolus, King of Caria; 6. The Colossus of Rhodes; and 7. The Pharos of Alexandria.

1. The Pyramids were the supposed tombs of monarchs. They are seventy in number, of different sizes.

2. The construction of the Hanging Gardens is variously ascribed to Queen Semiramis, and to Nebuchadnezzar—seven centuries later; yet still more than five centuries B. C.—who is said to have made them for the gratification of his Median queen, Amytis, because the Babylonian plain seemed dreary to her in comparison with the varied and romantic scenery of her native land. They are said to have formed a square, with an area of *four acres*, but rising in terraces curiously constructed with stone pillars, across which were placed stones covered with reeds and bitumen, and again with bricks united with cement. Above these, sheets of lead, to prevent moisture from flowing down; and, finally, a sufficient layer of earth; the top being raised three hundred feet above the plain, so that at a distance the whole presented the appearance of a pyramidal wooded hill. A reservoir at the top irrigated the gardens and fed the numerous fountains. These fountains, as well as banqueting-rooms, were distributed throughout the numerous terraces; groves and avenues of trees, and parterres of flowers, diversified the scene; whilst the view of the city and neighborhood was extensive and magnificent.

3. The Temple of Diana was originally built by Chersiphron, but after its destruction, by Herostratus, on the night when Alexander the Great was born (356 B. C.), was re-built by the inhabitants in a style of greater splendor than before, the very women contributing their ornaments to secure necessary funds. (Wasn't that a wonder?) Still, two hundred years elapsed before it was completed. It was the largest Greek temple ever constructed. Its length was 425 feet, its width 220 feet: the number of its columns 128, of which 36 were carved, and their hight 60 feet. It contained numberless statues and pictures, and was destroyed by the Goths in 260 A. D.

4. The statue of Jupiter in the Temple at Athens, was made of ivory and gold. It was the work of Phidias.

5. The Mausoleum (the tomb of Mausolus) was erected at Harlicarnassus by the disconsolate widow of Mausolus, Artemisia, (353 B. C.). It was described by Pliny and other ancient writers as late as the twelfth century, and was probably overthrown by an earthquake at some time during the two following centuries. It consisted of a basement, 126 by 100 feet, and 65 feet high, on which stood an Ionic colonnade, 23½ feet high, surmounted by a pyramid, rising in steps to a similar hight, and on the apex of which stood a group, about 14 feet high, of Mausolus and his wife (the supposed work of Scopas). The total hight given by Pliny is 140 feet.

6. The Colossus of Rhodes was a large human figure, made of metal, cast in separate pieces, and was completed 280 B. C. Some saying it was 90 feet, and others upwards of 105 feet high. It stood at the entrance of the harbor of Rhodes, but there is no authority for the statement that its legs extended over the mouth of the harbor. It was overthrown and broken to pieces by an earthquake 56 years after its erection, or B. C. 224. The fragments remained on the ground 896 years, until they were sold to a Jew of Emesa, who carried them away on nine hundred camels, A. D. 672; but what was done with the pieces I am unable to say.

7. The Pharos was a famous white marble tower 100 feet high, on the top of which fires were kept to serve as a light-house for the direction of mariners. It was erected on the Island of Pharos at Alexandria 280 B. C.

LILL writes:—"Dear Aunt Sue. Can you please tell me the author of the poem entitled the 'Golden Legend?' I thought it was written by Longfellow, but fail to find it among his works. Please publish this in your columns, for I know of several who would like to find this out."—It is Longfellow's; published in 1851, and may be found in any edition of his poems after that date.

Fig. 1.

Fig. 2.

ALLIE S. W. has "more carpet-rags sewed together" than they need for a carpet, and asks me what she shall do with them. Allie is evidently a farmer's daughter, and doubtless knows twice as much about such matters as I do; but I would suggest braiding your surplus rags into a long strip (of three-strand braid), and making mats and iron-holders of them. We have a large, and really handsome door-mat made in that way; the strands are about as thick as your finger. Whether the mats are round or oblong in form (and I much prefer the latter), depends upon the way you commence sewing them together, as shown in figures 1 and 2. If you wish a round mat, commence sewing the braid together as in figure 1; but if you would make an oval one, start it as in fig. 2. Sew the edges of the braid firmly together with stout, waxed thread—continuously round and round until you have the mat as large as you require it. Figure 3 shows the round, and fig. 4 the oval mat, as they will look when finished.

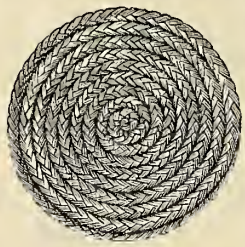


Fig. 3.

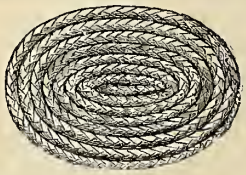


Fig. 4.

T. F. W., says, "My brother has bet me ten cents that he can prove that a pig has three tails; you are so good at puzzles, I want you to tell me how he does it." I should like first to give you a little lecture on betting, but I suppose it wouldn't do any good. I often hear boys in the street getting loud and angry in their discussions, and finishing up with "I bet you a dollar I can!" when I don't suppose they own five cents in the world. Don't bet if you can avoid it. In the matter of the pig's tail, I presume it is a catch, (or syllogism) and can be proved in this way: no pig has two tails, one pig has one tail more than no pig, hence one pig must have three tails. And by that rule you can "prove" to your brother that an ox has four thousand horns.

H. L. P.—You "thought it would be nice to see my name in print," then say "please give none but the initials." Well, here are the latter. Thanks for the Cross-word, but I have so many dozens of cross-words and numerical enigmas waiting their turn to be published that I cannot promise you will ever see it in print.

Something about Nails.

A nail is one of those small things that we could not well spare, yet very few men who use them, know or think how they are made, or how they should be used. We think it is one of the things that every boy should know about, and it may interest the girls too, for they sometimes have to drive nails, and if they learn that there is a right and a wrong way, it will be all the better. Not very many years ago all the nails we used were made by hand, with hammers on anvils. Each one was beaten out slowly from a long, thin iron rod, by men, or women, who worked at an anvil, which had a small forge at its side, where the rod was heated. The red-hot end of the rod was beaten out to the proper shape, and was then laid across a small, sharp cutting-bar, fixed on the anvil, and by a smart blow from the hammer, the rod was nearly cut through at just the place to make the nail of the right length. The pointed piece was then put into a small hole in the anvil, made to fit it, and was broken off from the rod by a twist. The end of this little piece, which stuck up above the hole, was then beaten into the right shape for the head, by a few quick blows of the hammer, and the nail was finished. A spring was then struck with the hammer, which jerked the still red-hot nail out of the hole, and it fell on to the floor, where each one helped to make up a very small pile in the course of a day's work. Just think how slow this must have been, and how many heatings, poundings, cuttings, twistings, and all that, it must take to make a pound of nails! Yet in this slow manner all the nails that were used years ago were made. Most of all the nails used in this country were made in England, where a great number of women used to work at nail-making, and more than that, these women had hundreds of boys and girls to help them. If we had now no other way of making nails than this, they would not be as cheap as they are. The nails we use are made by machines, which cut them from a plate of iron, and stamp the heads upon them very quickly. Did you ever visit a nail factory?—It is a very noisy place, for the clanging of the iron plates, as they are turned over and over, the crunching of the jaws, which cut off the nails from the plates, and clash of the dies, which form the heads, all going on at once from fifty or a hundred machines in one room, would prevent you from hearing a word that was said. Those who have become used to the noise, do not mind it, but you would only see the lips move, and could not hear a word. A nail machine is very small, but very strong, and is not much larger than the table of a sewing machine, or a small desk. The machines are mostly fed by boys, each of whom sits upon a high stool in front of his machine. At his right hand is a small bench, where he has a supply of pieces of iron plate, cut of a proper size for the sort of nails he is making. Watch the boy. You see that he takes one of the pieces of iron, which is shaped like that shown in figure 1, in a pair of pincers, which are kept closed tightly by an iron ring slipped over the handles; he lays the iron upon a block in front of him. Now notice the machine. At the end of the block a cutting-jaw works up and down very rapidly. As soon as the plate is put under the jaw—snip!—a narrow piece is cut off in an instant. The shape of the pieces cut off is shown in figure 1. It is there seen that these pieces are not of even width, but are wider at one end than at the other, but that two pieces laid together bring the cut straight again. But these pieces must be cut off so that the wider ends are all laid one way. To do this, the boy turns the plate over on the block, as soon as a piece has been cut off, and this turning has to be done as quickly as the cutting-jaw comes down, which is quicker than one can easily count. But these pieces shown in figure 2 are not yet nails. As each piece is cut off, it is seized by a pair of jaws, and held, while a die at the side gives it one single blow upon the wide end, and forms the head. As soon as this is done, the jaws open, and drop the nail into a tray, from which it slides into a box under the boy's feet, and as soon as one nail is let go, the jaws take hold of another piece. All these motions of the machine, and the boy who feeds it, are made so nearly together, that one who stands by, can notice no difference in the time when each is done. The nails, you will see, are made very rapidly, 200 or 300 in a minute; it is very wonderful, to see them drop out all finished. A boy we knew went to visit a nail factory, and when asked what he saw said, "A big machine that kept biting off pieces of iron, and spitting out nails." In some factories the plates are turned by the machine itself, and all the boy has to do, is to put fresh plates in the pincers, when the others are used up. All sizes of nails are made in this manner, from the large 20-penny or 40-penny spikes, used in building the frames of houses, to the carpet-tack, or the "sprigs," used in making children's shoes. If you examine a cut nail, you will see the sides where it is cut off. You will also notice that the nail tapers from the head to the point, and on this account there is a right way and a wrong way to use it. If the nail is driven into the edge of a board, with the cut sides across the grain, as shown in figure 3, the fibers of the wood are separated, and the board will split; or, if the nail happens to go in, it can be drawn out very easily. But if the nail is driven in with the cut sides in a line with the grain, as in figure 4, the fibers of the wood are broken and bent down, and the board does not split. If the nail is drawn out of the board, the bent fibers are drawn up with it, and hold the nail so firmly that it is not easily pulled out. So then, the way to make a nail hold fast, is to see that is driven in the right way.

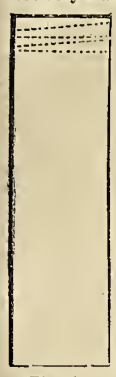


Fig. 1.

Fig. 2.

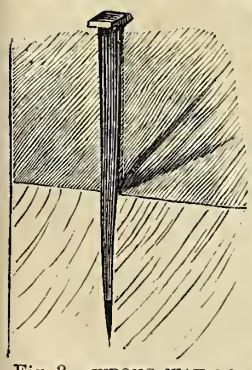


Fig. 3.—WRONG WAY TO DRIVE A NAIL.

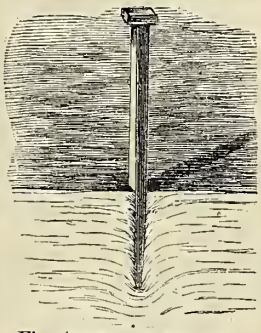


Fig. 4.—RIGHT WAY TO DRIVE A NAIL.

If some one was to ask you what is a 20-penny or a 10-penny nail, few of you would know what to say. These are the names by which we know one size from another. A shingle nail is a 3-penny; a fence nail is an 8-penny, and so on up to the very large 40-penny ones. But how came these names to be used? When nails were made by hand, those who made them were paid so much a thousand for making them. For small nails, 3 pence, (English money), was paid, and for the larger ones, 8 pence, 10 pence, and so on, according to the size. These nails then became known as 3-penny, 8-penny, or 10-penny, and we know them by the same names still, although they are not made so now. Cut nails are brittle, and when bent will break, but if you should want to bend or clench them, all you have to do is to heat them red hot and leave them to cool slowly in some hot ashes, or some of the black dust of a blacksmith's forge. This is what is called "annealing," and makes them tough.

Aunt Sue's Puzzle-Box.

BISECTED EASTERN CITIES.

1. Very angry and to deliver. 2. Contest between nations and a cutting instrument. 3. Harbors, and a part of the body. 4. Part of a tavern and human beings. 5. A fruit and a pile of grain in the field. 6. Water impregnated with alkali, and a home of wild beasts. 7. A vessel and a weight. 8. A sack, and a familiar name for a certain relative. ISOLA.

DOUBLE ACROSTIC.

The initials name one of the United States, and the finals a Territory.

1. An American river. 2. A town in New Zealand, 3. One of the United States. 4. A European Cape. 5. A river of Spain. ITALIAN BOY.

PI.

Frhitt si trebte hant na anntiny.

CROSS WORD.

My first is in brown but not in black,
My next is in loss but not in lack,
My third is in horse but not in cow,
My fourth is in yet but not in now,
My fifth is in shoe but not in boot,
My sixth is in rifle but not in shoot,
My seventh is in rain but not in snow,
My eight is in yield but not in flow,
My ninth is in blow but not in tap,
My tenth is in bed but not in nap,
My whole is a town you may find on the map.
M. JENNIE H.

NUMERICAL ENIGMA.

I am composed of 33 letters:
My 1, is a bird.
My 2, 3, 26, 5, is hoary.
My 6, 7, 8, 9, is a bundle or bale.
My 10, 11, is a pronoun.
My 12, 24, 14, is a case or receptacle.
My 15, 30, 32, 18, denotes nearness.
My 19, 16, 21, 4, is a prime number.
My 23, 13, 25, 22, 27, represents a number which occurs twice in twenty-four hours.
My 28, 29, 20, 31, 17, 33, is a covering.
My whole is a sentence that contains every letter of the alphabet. ALPHA BETA.

SQUARE WORD.

1. An instrument of music. 2. The exterior of seed. 3. A plant found in the southern states. 4. What's embodied when you plead. SPHINX.

ANSWERS TO PUZZLES IN THE JANUARY NUMBER.

DOUBLE ACROSTIC.—W—indha—M Wilson, Moskwa.
I— ny —O
L— nca —S
S—uffol —K
O—gema —W
N—eshib—A

CHARADE.—Rainbow.

CONCEALED VEGETABLES.—1. Tomato. 2. Radish. 3. Potato. 4. Bean. 5. Spinach. 6. Onion.

RHYMING ANSWERS.—1. Tin. 2. Linn. 3. Kin. 4. Pin. 5. Fin. 6. Bin. 7. Shin. 8. Din. 9. Sin.

CROSS WORD.—Florida.

TRANSPOSITIONS.—Reed, deer.

NUMERICAL ENIGMA.—Hearth and Home.

PI.—That Nature gives her handmaid, Art,
The themes of sweet discoursing;
The tender Idyls of the heart,
In every tongue rehearsing.

Thanks for letters, puzzles, etc., to Cecilia, T. F. D., Frank Nichols, R. W. Moore, Myra A. H., Isola, Carrie D. A., Ronkonkoma, Mary.

ANSWERS TO THE GEOGRAPHICAL REBUS.

1. Grampion Hills. 2. Newcastle. 3. Poland. 4. West Indies. 5. Persia. 6. Manchester. 7. Spain. 8. Canton City. 9. Turkey. 10. Cambridge. 11. Hayti. 12. Borneo. 13. Gibralter. 14. Buffalo. 15. Tom Bigbee river. 16. Milan. 17. Shanghai. 18. Baltimore. 19. Lyons. 20. United States.

So many have sent correct answers to this rebus, that the editors say that they cannot afford the room to publish their names; they are so crowded.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

The Great Clam-Bake.

Fanny and Ransom and Will sat on the edge of the piazza, one summer afternoon, all three feeling very cross. The fact was, they could not think of anything to do, and that, you know, always makes little folks unhappy. Fanny would not so much as look at poor Major who was pawing and growling over a stick, and looking up now and then to see if she would not join the fun. She even pulled her big sun-hat over her eyes, so that she might not see him, and was just about to say something cross when Ransom exclaimed: "Let's go a'fishing!"...."Fishing!" said Will. "Where? in the brook?" And Fanny forgot to be cross, and pushed her hat up to listen...."Brook! No, that's no fun, the fish are so little there. We can fish off the dock."...."Down at the river? But mother won't let us," cried Fanny.... "We needn't tell her," said Will, "she won't care as long as we don't go with the Simpson boys."...."She might," said Fanny, doubtfully...."Oh, come on!" cried Ransom, "what are you afraid of? I won't let you get drowned."...."I'm not afraid of being drowned," said Fanny. "Come, let's get the fishing rods and lines."

Fanny loved her mother, and did not wish to be disobedient, but their mamma had never positively forbidden their going to the dock, and it would be such fun!

Just then Major gave a short bark, and ran around the corner of the house. Of course, all the children ran after him, wondering what he could have seen, but nobody was there, and they concluded it was only one of Major's capers. All seemed quiet; mamma was upstairs busy in her room, the cook scrubbing the kitchen, and James—no one knew where he was—at the stable, probably. So the children went very quietly, got their rods and lines, and keeping out of sight as much as possible, started off through the long grass of the orchard for the river road. But they had gone only a little way before they heard mamma calling: "Children, children, come back to the house."... There was no help for it; so back they went, very slowly, for it was up-hill, and besides they didn't want to go back...."Where were you going," she asked, as they came into her room...."Fishing," said Ransom, not very boldly...."Not to the river!" exclaimed his mother. The children looked guilty, but said nothing. "Now I am really grieved," said mamma sadly. "I did not think you *could* do what you know would displease me. I could hardly believe it when James told me."...."James!" cried Will, "how did *he* know?"...."He must have been listening when Major barked that time," said Fanny...."Mean, horrid thing!" exclaimed Ransom, indignantly...."Children," said their mother, "if you had been talking of what was right, you would not have cared if you were overheard. You have yourselves to blame, not James. Now I shall take away your fishing rods, as you cannot be trusted with them, and keep them until I think you can obey my wishes."

The children went down-stairs very soberly, and seated themselves again on the piazza.

"I think James is just as mean as he can be; I hate him!" cried Ransom, his black eyes flashing...."He always spoils our fun," said Will, in a choked voice, while large tears rolled down his cheeks ...Major came up to the little fellow, wagging his tail in sympathy, and was just going to lick his face, when the grating of

wheels was heard. At that sound Major left everything, and ran down the road, barking with all his might.

"It's the fish-man," said Fanny, as a queer-looking wagon came round the corner of the house, and stopped at the kitchen door.

Now fish-men are rather an odd set, as a rule, but of all fish-men this was the oddest. He was a short, bow-legged little man, and wore blue army-trousers, and a very long, light-brown coat, which hung on him like a bag. His face was covered with tangled gray whiskers, and his head with tangled gray hair, some of which stuck up through a hole in the crown of his old straw-hat. But the fish-man was not near so queer as his horse. This animal had a body very much like the boiler of a steam-engine mounted on legs, so short and thick that they looked much like those of a piano, but much more crooked. These legs seemed to be crooked in all ways, and made the poor creature's feet turn inward like a duck's. This old horse had a very long, thin neck, and an immense head, which he always hung very low, as though he were ashamed of himself. The two boys and their sister forgot their grief in examining the fish-man's cart. There at one end was a great lot of clams. Now, Fanny was very fond of clams, and she no sooner saw them than a bright idea popped into her little head..... "Boys," she said, "let's have a clam-bake! We'll ask the fish-man for a clam; you ask him, Ransom." ...."All right," said Ransom. The good-natured fish-man readily gave the clam, and three children started off in glee with their gift and a couple of matches....."We'll go up to the hill-orchard, and make a fire in the stone-fence there," said Ransom....."There's James coming from the stable, let's ask him to go with us," said Fanny...."No, I won't! Mean fellow, I shan't ask him to our clam-bake!" said Ransom ...."I won't play if he comes," added Will, spitefully...."Well, we won't ask him," said Fanny, as she looked at the one clam, and remembered there might not be enough to go around. So these three children, with anger in their hearts, went up to the hill-orchard, and having selected a hole in the stone-wall where it would not be dangerous to build a fire, they gathered dry leaves and sticks, and placed the clam on them, covering it with more leaves, and then Ransom lighted the fire, and all stood round to watch.

"Don't it smell good?" asked Will, hungrily, as the heat made the clam open and spill some of the juice with a hissing sound. Suddenly there was a louder hiss, and what was the children's horror to see coming out of the wall, a small black head, followed by a long, black body.

"A snake!" shrieked Will, as the creature opened its mouth and thrust its forked tongue at him threateningly. The clam and clam-bake were both forgotten, as the terrified children rushed down the hill to the house, and up to their mother's room.

"Oh, ma!" cried Fanny, all out of breath, "we've seen a snake! It came right out at us just as we were having a clam-bake!"...."Tell me about it, Ransom," said their mother, and Ransom gave her the story.

"Why do you think the snake came out just then?" she asked, when he had finished his story... "Perhaps it was sent to punish us for not asking James," said Fanny, who had a very tender conscience ..."Maybe it was," said Will, getting close to his mother with a very scared face...."No one spoiled your pleasure this afternoon but yourselves," said mamma. "You first took your own way even when you knew it would grieve me, and then, because your hearts were full of anger toward your brother. If you had asked James to go with you, I am sure he would have driven away the snake, and you might have had the clam-bake after all." "Let's go and ask him to play with us," said Fanny, penitently, to which her brothers agreed. The children did not soon forget that day, and when one was beginning to be cross, the others would cry out "snake," and they would all laugh at the way they lost their feast of one clam.

LITTLE MAY IN GRANDMOTHER'S CHAIR.

What Little May Thought.

Little Mary—Little May they called her, when she was good, and Little Mischief when she was troublesome—was tired. She had dressed up her dolls, she had put her little baby-house in order, she had played with the kitten until the poor thing was so teased that it ran away and hid from her, and here she was with nothing to do and no one to play with. Ah! here was grandmother's chair! Good grandmother had gone to take her afternoon nap, and in a minute the little girl was in the chair. How large it seemed. "I wonder if grandma was ever so small as I," she thought, "and shall I ever be so large as grandma?" Here was the cap, she must try that on. It was ever so much too large. "I wonder why grandma wears a cap? But I can't look like her unless I put on her spectacles."—She put on the glasses, but found that she could not see anything, so she took them of again, and wondered why old people wore such things. Then grandma's hymn-book too, had such large letters, why was that? Little May's mother, finding the house so quiet, wondered where the lively girl could be, and at last found her in grandma's chair, not doing any mischief, as she had expected to find her, but for once very quiet, and thinking about something. Little May then told her mother what she had been thinking about, and her mother took her on her lap, and told her that grandma, and all old people, were once frolicking children; that all little girls and little boys, if they lived, would become like grandma and grandpa. When they get old, their bodies begin to wear out, they can not walk so well, their eyes often need to be helped by glasses, even to read large print like that in grandma's book; their hair gets thin, and they wear caps. "How horrible," said May, "I hope I may never grow old."—"Do not say so, my child," answered her mother, "your wishes will have nothing to do with it; if God spares your life, you will one day become old like grandma, and she is not horrible, is she."—"Horrible! why mama, she is just the dearest, sweetest grandmother that ever was, I would not mind it if I could be such a darling old grandmother as she is."—"Do you love her any the less because her eyes need glasses, and because she has to sit most of the time in her big chair."—"Not a bit, because I can find her needle when she drops it, and bring her things that she asks for, and she tells me stories of when she was a little girl, and puts her arm around me when I am tired, and sings one of her little hymns, and I feel so rested. If she couldn't see at all, and couldn't walk, I should love her just the same."—"You begin to see now," said the mother, "what you will learn better when you get older, that it is not the bodies of those we love that are so dear to us, but the spirit that moves them, and if the body grows old, and the heart or soul remains sweet and lovely, like grandma's, there is nothing to dread in growing old. You can see when grandma smiles, the light of love shining through her wrinkles, and her dear old eyes, which see so poorly, are bright with this light, which makes us all happy."—And little May very often thought of this.

To Mount a Map.—Julia M. W. of New Jersey, has drawn a large map of her father's farm, and now wishes to know how to mount it on rollers. It is very easy to do this with proper care, if the map was drawn upon thick paper. Take a piece of common cotton cloth, bleached is best, a few inches wider each way than the map. This must be tacked to some smooth surface, such as an old table, a floor that has no wide cracks, or a board made for the purpose by putting narrow boards together by cleats. Put the tacks in the cloth an inch apart, or less, doubling under the raw edge, that they may hold better; do not drive in the tacks more than half way, and stretch the cloth tight. Lay the map down on a clean paper, and cover the back with an even coating of cold, stiff, boiled flour paste, taking care to have the edges well covered. Let two persons lift it, and put it pasted side down upon the cloth. Place a thin paper on the map, and with a cloth rub from the center towards the edges, to remove all the air. Then let it dry; no matter how much it wrinkles, it will be smooth when quite dry. The tacks are then to be taken out, and the map mounted.

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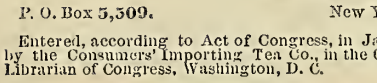

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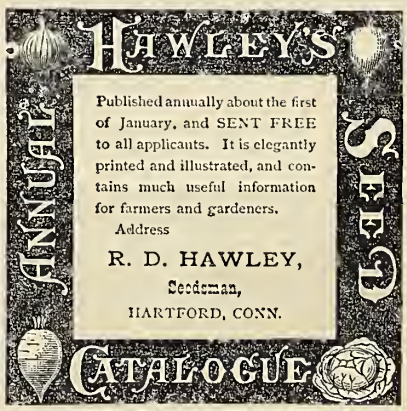

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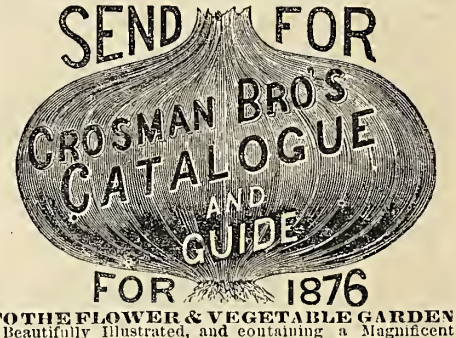

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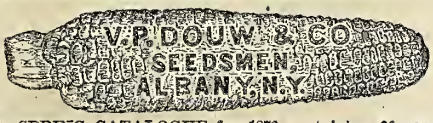

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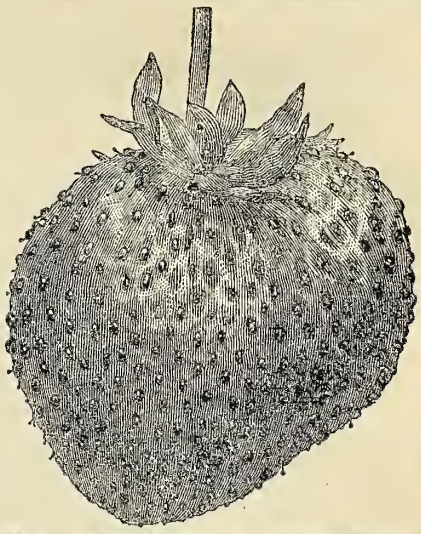

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1876.
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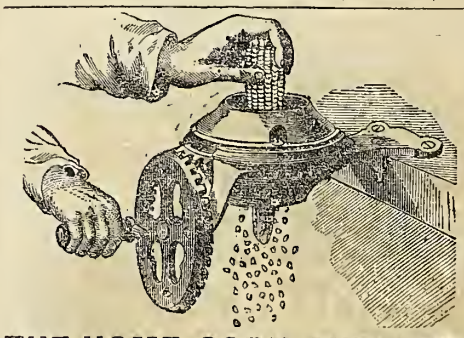

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HEIKES NURSERIES CO., Dayton, O.

A GENERAL ASSORTMENT OF PEACH TREES, at $3 to $5 per 100, or $20 to $40 per M. Wilson's Early Blackberry Plants, at $15 per M.
R. S. JOHNSTON, Stockley, Del.

PRIME FRESH APPLE SEED, for sale at $6 per bushel. **E. P. CLARK, Dansville, N. Y.**

E. P. ROE,

in preparing his **Manual** *on the* **Culture** *of* **Small Fruits,** *has been led to* **double** *its size, making it* **full** *and* **complete** *for the* **practical** *purposes of* **garden** *and* **field** *cultivation. It has also been published in very* **handsome** *form. This has increased the cost. It will be mailed on the receipt of price—***50 cts.**
Send for circular and price list of plants.
Address **E. P. ROE,**
Cornwall-on-the-Hudson, Orange Co., N. Y.

FREE The **FRUIT RECORDER** for *March* is especially valuable to the orchardist, tree agent, and planter. A copy **free** to all applicants.
Address **A. M. PURDY,**
Rochester, N. Y.

Try Canada Seeds. Grown by myself. Seeds of the leading and most approved varieties. (Send for Catalogue.) Address JOHN F. OTWELL, Seed Grower and Gardener, Drawer F., St. Marys, Ont., Canada.

ONION SEED From finest selected stock only. My own growing, warranted first-class in every respect. White Globe Onion, $2.50 per lb. Yellow Danvers, $2.00 per lb. Red Globe, $1.50 per lb. Sent post-paid by mail.
Address E. B. JENNINGS, Southport, Conn.

HUDSON RIVER FRUIT GARDENS.—Descriptive price lists now ready. Many novelties for this spring. **Star** and **Monarch of the West** Strawberry Plants. Wilson's Albany, $25 per 10,000. **Highland Hardy,** Ganargua, Norwood, and other Raspberries. Blackberries, Currants, Vines, Fruit Trees, &c. Prices very low. Also **Berry Baskets**—new styles.
R. H. HAINES, Malden-on-Hudson, N. Y.

IF you want Blackberries, plant the **Dorchester.** Early, hardy, productive. The best of all. I will sell at $7 per M. Wilson Strawberries, $2 per M. Raspberries and other stock low. S. T. DUFFELL, Yardville, New Jersey.

John Saul's Catalogue of New, Rare and Beautiful Plants.

For Spring of 1876, will be ready in February, with a colored Plate—Many beautiful new plants are offered—all at very low rates—Free to all my customers, to others price 25 cts. A plain copy to all applicants free.
WASHINGTON, D. C.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 87.

Rape.—"B. F. H.," Suffolk Co., N. Y. Rape will not ripen its seed if sown late in the season until early the second year. It is similar in its habits to the turnip, although it has not a thickened or bulbous root.

Southern Minnesota.—"Young Farmer," Newburgh, N. Y. Southern Minnesota is a spring wheat country, and the best quality of grain is produced there. There is no desirable government land left, but plenty of railroad land can be bought from $5 to $10 per acre. It is a fine, open, prairie country without timber, with good water and soil, and with healthful, agreeable climate, though sometimes cold enough in the winter.

Hungarian Grass.—"J. M. B." Hungarian Grass and Hungarian or German Millet, are much alike, except in the form of the head. They are annual plants, and must be sown just as oats are. A peck of seed is sufficient for an acre. It is usually sown in June and cut in August, before the seed is ripe. When ripe it makes coarse hay, and is somewhat indigestible.

The Cheapest Method of Reducing Bones.—"R. S.," Hancock Co., W. Va. The cheapest way of rendering bones soluble, is by treatment with sulphuric acid, but it is not a method that we should advise for those persons who are unused to work with such a dangerous substance. If the bones are packed in layers, in a pit with fresh wood-ashes, and kept moist for two or three months, they will become soft, and may be reduced to powder easily.

Making Butter from Milk.—"A. F.," Bruce, Ontario. There is no difficulty whatever, in churning butter from new milk. A longer time is required than in churning the cream—that is all. In some dairies this is always followed, the milk being churned as soon as cool. Very rich Jersey milk, of which one-third may be cream, may be churned into butter more readily than the poorer milk of ordinary cows.

Where Mules are to be Procured.—"W.," Union Co., N. J. The best places to purchase mules, are middle Tennessee, Kentucky, southern Indiana, and Missouri. The whole country is chiefly supplied from these localities.

Making Candles.—"T. L.," Baltimore Co., Md. Tallow from the kidney fat of an ox, is too hard for candles. It should be softened by mixing 1 lb. of lard with every 12 lbs. of tallow. Some mix one pound of finely powdered alum, and 4 ounces of beeswax, with 12 pounds of tallow, the whole being stirred together until cold. This is then melted and poured into the molds, and the candles are cooled slowly. If cooled too quickly, the candles will crack and fall to pieces.

The Forms of Corn-Cribs.—"H. S.," Baltimore. Corn houses are made with sides sloping outwards, wider at the top than at the bottom, that the sides may shed rain easily. This is the only advantage. They may be made with perpendicular sides that will shed water perfectly, if that form is desired. A flat stone or broad piece of plank, will make a "rat-guard" as effectively as an inverted tin pan, and will be more durable. The sloping sides of the pan, however, afford no standing room for vermin, and may therefore be used with lower posts, and nearer to other buildings or fences with safety, than the flat cap.

Purchase of Ayrshire Cattle.—Mr. Jos. F. Brown, of Providence, R. I., sends us a list of Ayrshire cattle, purchased in his vicinity by Mr. Peter Coutts, of Santa Clara Co., Cal., as follows: from the Hillside herd of Mr. J. F. Brown, the 2-year-old heifers, Floy Douglas, 2nd, and Linda, 2nd; the yearling heifers, Floy Douglas, 3d, Linda, 3d, and Ethel Douglas, 3d, and calf Floy Douglas, 4th, price of the lot $2,500. From the herd of Hon. E. D. Pierce, Maggie Douglas, 3 years old; Hope Douglas, and Linda Douglas, heifers, for $1,000. From H. G. Russell, Young Stella, Nydia, and Mariam, three 3-year-olds, for $800. From Wm. P. Vaughan, 4-year-old cow, Esther, and yearling Breadita, for $650. From O. Brown, two yearling heifers, for $600; from C. & S. Harris, a 4-year-old cow, $300, and from L. H. Wood, a yearling heifer for $200. All the 2-year-olds and yearlings were sired by Prince Edward, of the Hillside herd.

"Science Applied to Farming," Correspondence.

CORN AND COBS AS FOOD.—"S. B. B.," Concord, Mass. Few reliable analyses of American corn, and none of cobs have, to my knowledge, been made. Analyses of four American varieties are given below, with one of European cobs. (The sugar, starch, gum, and cellulose or fiber, are carbo-hydrates).

100 lbs. *Corn contain*	*Early Dutton Corn.*	*Common Yellow Corn.*	*King Philip Corn.*	*Stowell's Evergreen Sweet Corn.*	*Corn Cobs.*
	lbs.	lbs.	lbs.	lbs.	lbs.
Water	8.08	10.52	9.79	10.86	14.0
Albuminoids	9.62	9.72	11.87	11.10	1.4
Sugar	3.00	4.78	3.05	11.64	42.6
Gum	4.22	2.36	4.80	4.64	
Starch	65.40	64.49	62.23	49.58	
Fat or Oil	5.67	4.42	4.45	7.66	1.4
Cellulose	2.52	2.40	2.21	2.63	37.8
Ash	1.52	1.31	1.60	1.89	2.8
	100.00	100.00	100.00	100.00	100.0

The sweet corn is especially rich in sugar and oil. All the varieties of corn contain very little crude fiber, and considerable digestible substance. Cobs, on the other hand, are very poor in albuminoids, and fats, and contain a great deal of fiber, and are comparatively indigestible. They furnish some nutritive material, however, and when finely ground, and mixed with concentrated, nitrogenous foods, are not without value as fodder. Corn-meal is a very concentrated and easily digestible food. Although it contains comparatively little of albuminoids, which are the most valuable constituents of foods, and a good deal of carbo-hydrates, which are less so, it is very rich in fatty or oily substances, and these have a very high nutritive value. A number of experiments, cited elsewhere, have shown that an excess of carbo-hydrates in concentrated foods, decreases the digestion of hay, clover, and other coarse foods. The oily substance, on the other hand, do not appear to have such an unfavorable effect. Indeed, it has been strongly urged that they are positive aids to the digestion, though this is hardly proven. It is, at any rate, evident that the results of accurate scientific observation are fully in accord with the common impression, that corn-meal is one of our most valuable foods. And American farmers possess a great advantage over their European competitors, in having so rich, useful, and cheap a fodder.

HUNGARIAN GRASS.—"D. S. H.," Clio, Mich., "A. B. T.," Columbia, Conn., and others. I know of no analyses of Hungarian grass at successive periods of growth. We have some specimens at our Experiment Station, awaiting investigation, of which results will be given in due time. The fact is, that very few analyses of our American fodder materials have been made, though they are much needed, and some are now in progress.

BREWER'S GRAINS AND MALT-SPROUTS.—"H. C. B.," Freeport, Ill. The "refuse grains after brewing" or "malt" you speak of buying at the breweries, are the "brewer's grains" of our table 21, in Jan. No., p. 10. The grain is sprouted in malting, and the "malt-sprouts" of the table are these sprouts separated from the grain.

BOG-HAY AS FOOD FOR STOCK.—Mr. A. B. Allen, the original founder of the *American Agriculturist*, in 1842, confirms from his own experience, the views set forth in our articles in January and February, on the feeding value of salt-marsh and bog hays. Referring to the statement that 267 lbs. of average cotton-seed meal, costing, say $5.34, would make a ton of early cut bog-hay, of average composition, about equal in nutritive value to a ton of the best upland hay, he says, "Now the latter is worth $40 per ton, on my farm at Tom's River, N. J., while the former, cut from my own meadows, costs me not over $5.00—difference I save is $35.00. I suspected this some time ago, and in the autumn of 1874, commenced feeding my bog-hay, and I don't see but that the cows give just as much milk, and make just as much butter, and that the horses look as well and do as much work, and with the same ease as when fed good upland hay. But I have lessened the quantity of cotton-seed meal given above, and substitute for this, a mixture of wheat bran and Indian meal—these three costing only as much as the cotton-seed alone. I find it better to vary the feed. Thus, you see, that like the Mr. W. referred to, I also corroborate the German experiments." Mr. Allen likewise fully endorses the view of Mr. Harris, as to the high value of corn-meal for mixing with coarse foods.

HOW TO GET GOOD FERTILIZERS.—A. Deakyne, New Castle Co., Del., writes: "I am a farmer, and as such, am agent for a club to buy superphosphates. Can you assist me in getting analyses made by several varieties used among us, so that we may know the relative value of each? . . . We don't want it to cost too much. Please give me as much information as you can in regard to it. "H. M. B.," Mass., "E. N. P.," Vt., "G. B.," Md., and several others make similar inquiries. Farmers in Connecticut can have such work done at little or no cost, as appears from the following circular, which has been extensively distributed in that state and elsewhere:

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION.

Analysis of Fertilizers.—This Station, established by the last General Assembly, is prepared, in addition to scientific researches of a more abstract character, to execute analyses of fertilizers at the Chemical Laboratory of the Wesleyan University at Middletown, Conn.——As this work is paid for in large part from public funds, those analyses which are of public interest, will be performed gratuitously. Preference will be given to articles furnished by Farmer's Clubs or Agricultural Societies, and to those whose novelty, importance, or extensive sale, give them special interest to the farmers of the state. Where duplicates of the same brand, equally well selected and authenticated, are received, the Director will select from them for analysis at his discretion. The results of analyses will be sent directly to the party furnishing the sample. They will also, where gratuitous, be held at the service of the Station and of the Board of Agriculture for publication, and for general use. For analyses made in the interest of private individuals, the latter will be charged a moderate fee, and will entirely control the results.——It is plainly for the interest of both dealer and consumer, that fertilizers should be bought and sold upon the basis of their actual value, as determined by their composition. To further such a regulation of the trade in commercial fertilizers, arrangements will be made with those dealers, who wish to place their stock under the supervision of the Station, whereby their wares will be inspected, samples taken for analysis, and results of same reported, under the authority of the Director. It is hoped that all will see the advantages of this course, and encourage its adoption, and that every dealer will avail himself of the opportunity thus offered by the Station, to secure for himself and his customers the benefit that must accrue therefrom.——The following directions must be *strictly followed* in order to obtain fair samples, and to do justice alike to manufacturers, dealers, and consumers.

DIRECTIONS FOR TAKING SAMPLES OF FERTILIZERS FOR ANALYSIS.

For Guanos, Superphosphates, Bone Dust, Potash Salts, Gypsum, etc.—Have ready for holding the sample a *clean*, tight receptacle, preferably a closely capped glass fruit jar, of about one quart capacity. Provide also a large sheet of clean wrapping paper, or a clean newspaper. Weigh carefully three barrels, bags, or packages of the fertilizer, and carefully record the actual weight of each. Open, one after another, each of the three bags, barrels, or packages, that have been weighed, and mix well together the contents down to one-fourth, or better, to one-half its depth, crushing very finely any lumps that may be found. Then dip out five (5) equal cupfuls (a tea-cup or bowl will answer) from different parts of the mixed portion of each package. Pour them (15 in all) one over the other on to the paper; intermix these again thoroughly—but expeditiously, to avoid loss or gain of moisture; fill the fruit jar or other receptacle from this mixture, close tightly, pack glass fruit jars in a box, to prevent breakage, label distinctly, and send by express or otherwise, charges prepaid, to "*Agricultural Experiment Station, Middletown, Conn.*"——Each sample must be accompanied by a statement of the weights of the packages, when the article is in packages, the price per ton, etc., also by an exact copy or a specimen of any printed or written *analysis, advertisement, pamphlet*, or *statement* that accompanies it, or that is used in its sale. Also by a copy of the *brand, name*, or *trade-mark*, the name and address of the *dealer*, from whom the sample is procured, and of the name and post-office address of the person or persons taking the sample. No sample will be analyzed for *public use*, unless the name and address of the sender, and other facts are given with sufficient accuracy and definiteness to enable the Station to verify any published statement in regard to the source of the article, etc.——Blanks are prepared for receiving these facts, and those designing to send samples are requested to apply for them at the Station.

W. O. ATWATER, *Director*.

The Connecticut Experiment Station is ready to do as much outside work as it can without interference with its duty to the people of that state. Their interests must be first served, since it derives its chief support from them. It would be most happy to communicate with our correspondents, and would doubtless make the analyses. Of course it could not offer its work to people outside the state at prices lower than are ordinarily charged by reliable chemists. We should advise Mr. D. to learn of different dealers at what prices they will furnish him their wares with *guaranteed* percentages of nitrogen, phosphoric acid, or potash (see A Talk About Fertilizers in February *American Agriculturist*). Then let him see which one will supply the desired ingredients in the best form and at the lowest price per pound, and select accordingly. The Experiment STATION will test the article, and if it is not equal to the guarantee, he can refuse to pay the full price. If the dealers in his region are not ready to trade on this basis, there are plenty of others who will. Several such have already "placed their stock under the supervision of the Station," and will furnish him superphosphates with soluble phosphoric acid at 12½ cents per pound, while in many of the ordinary fertilizers it will cost 15 to 30 cents per pound.

The N. J. Horticultural Society.

The first annual meeting was held at New Brunswick, N. J., on Jan. 21, with an encouraging attendance. An annual address was given by the President, George Thurber, which was followed by the following papers: Wm. Parry, of Cinnaminson, gave his experience with the Raspberry, in the course of which he distinctly pronounced the Amazon to be only an old variety with a new name. C. W. Idell, of Hoboken, gave a paper on the Huckleberry, especially as to the manner of collecting and marketing the fruit; this was listened to with much interest, it being probably the first time this fruit has engaged the attention of a horticultural meeting. Prof. Geo. H. Cook, State Geologist, and Prof. of Chemistry and Agriculture in the Rutgers' Scientific School, gave an address upon Fertilizers, especially with reference to experiments upon the College Farm. On the second day a paper was presented by Peter Henderson, Jersey City Hights, on the Geranium as a Bedding Plant; one by A. S. Fuller, of Ridgewood, on Entomology in its Relation to Horticulture; Mr. E. W. Durand, of Irvington, gave an account of his method of hybridizing the Strawberry; Geo. Such, of South Amboy, read a paper on the Gladiolus and other Summer-flowering Bulbs, and their usefulness for Lawns and Door-yards. Edwin Allen, of New Brunswick, gave an account of the New Fruits of Promise. Wm. H. Goldsmith of Newark related his success in keeping Pears beyond their usual season of ripening, and the final paper, by G. W. Thompson, of Stelton, was upon Hedges and Screens. It will be seen that a sufficient variety of topics was presented to suit all tastes, and some of the papers called out animated and interesting discussions. The Society will not probably undertake an exhibition this year, but will use its influence to secure a proper representation of the fruits of the state at the Centennial Exhibition. The next annual meeting will be held next January, at the same place. Mr. E. Williams, Montclair, is the Recording, and B. B. Hance, Red Bank, the Corresponding Secretary.

The N. Y. Horticultural Association.

The regular meeting was held at room 24, in the Cooper Institute, on Feb. 2. Thirty-five new members were elected, and Thomas Hogg, of Yokohoma, Japan, Marshal P. W. Wilder, of Boston, Mass., and Chas. Downing, of Newburgh, N. Y., were elected honorary members. The display of plants was less than at the previous meeting, owing to the inclement weather.

HORTICULTURAL WONDERS.

A report was presented of the doings of what is known as the "Blue Rose Firm," a concern similar in its pretensions to "La Fayette & Co.," of former years, and which had planted itself on Broadway. The firm had been "interviewed" by two of the members of the Association on the day of the meeting, who had taken full notes of the wonderful articles they offered. The "novelties" did not vary much from those that they or similar concerns have been in the habit of offering each spring, year after year. This shows that New York is large enough to furnish a new crop of gulls every year to be entrapped by these precious scamps. They have now, as before, the inevitable blue, black, and striped roses; the "strawberry tree," producing luscious fruit the size of an orange; asparagus seed that yields a cutting in six weeks; pansy seeds, producing flowers of the brightest scarlet. There are also pear trees, with fruit that might shame in size an ordinary melon; gladiolus bulbs producing flowers blue as indigo, and nearly all other fruits, flowers, and vegetables, as seeds and roots, of a like wonderful character. Most of the professional gardeners, members of the society, were aware of the doings of the "Blue Rose" men, but had never before had an opportunity to take concerted action in exposing the swindle. The feeling evinced among the members showed the chances for these enterprising gentlemen to make another raid on the pockets of the wonder-loving New York burghers, were not likely to soon again occur. The matter having been discussed at the meeting, it has already been noticed by the daily papers, and the "Blue Rose men" will probably be thoroughly *advertised*.

In 1873 one of these concerns was thoroughly shown up in both the *American Agriculturist* and *Hearth and Home*, and in about a week their sales fell off to such an extent that they left for a more favorable clime. The present indications are that the Horticultural Association will be a success, and it can do the public no better service than by exposing all such pretenders as these "Blue Rose" chaps, and all other horticultural swindles.

The Cause of Bitter Milk.—"J. H. L., Spring Valley, N. Y. The greater number of cows are so constituted that, three months at least before calving, the character of the milk changes, and it contains a larger proportion of salts, which are often plainly apparent to the taste. Sometimes these salts are bitter, and spoil the flavor of the milk. It is time then to dry the cow. When a cow gives only two quarts of milk a day, and is in calf, the milk is rarely fit to be used. The fœtal calf then requires all the nutriment contained in this milk, and is deprived of it if it is taken from the cow.

Catalogues Received.

These notices of catalogues are made solely for the benefit of the readers of the *American Agriculturist*. None of doubtful integrity are named. If any dealer receives any benefit from the mention of his catalogue, we are glad of it. One seedsman, who does not seem to be aware that these are *editorial*, and not advertising columns, sent us the money to pay for keeping the notice of his catalogue here for the next two months. He should apply to the advertising department; these notices are given merely as news.

SEEDSMEN.

BRIGGS & BROTHER, Rochester, N. Y., publish their catalogue as the "Quarterly Illustrated Floral Work." Besides the illustrated January number, they send a brilliant and amusing colored engraving representing the "Great Tomato Race," with a distressingly comical beet taking time on a turnip. A good hit.

ROBERT BUIST, JR., Nos. 992 and 994 Market street, Philadelphia, sends his Wholesale Price Current, and his Almanac and Garden Manual; this last contains abundant instructions for sowing, and a special calendar for the southern states.

ALFRED BRIDGEMAN, 876 Broadway, New York. The name of Bridgeman has long been an honored one in the horticulture of New York. The present house issues catalogues of both flower and vegetable seeds, which show that they keep up with the time in novelties, and have all the standard sorts.

ORANGE W. CLARK, Buffalo, N. Y. A catalogue of vegetable and flower seeds, and "as neat as a new pin."

COLE & BROTHER, Pella, Iowa, grow a good share of their own seeds. They show enterprise in offering additional prizes to those who take premiums at fairs with products from their seeds, and a wise liberality in commending to their customers the most desirable horticultural books, and in advising them to take the *American Agriculturist* and other useful journals. Their catalogue, though not so large as some others, is exceedingly neat, compact, and instructive.

CROSMAN BROTHERS, Rochester, N. Y. Vegetable and flower seeds, with various novelties in both, and a brilliant colored plate.

HENRY A. DREER'S Garden Calendar for 1876, contains as usual, a full list, including the specialties peculiar to this house, and to Philadelphia. It also has the most desirable green-house and bedding plants, small fruits, etc.

JAMES FLEMING, No. 67 Nassau st., is now, with one exception, we believe, the oldest seed-store in New York. It has all the standard sorts and various novelties.

JAS. R. V. HAWKINS, Goshen, Orange Co., N. Y. Garden and field home-grown seeds, with varieties of potatoes not before offered.

GEO. S. HASKELL & Co., Rockford, Ill. The western seedsmen do not propose to be outdone by their eastern brethren, as this very handsome catalogue shows. Besides a full seed-list, it contains a well considered garden calendar and much other useful matter.

A. HOWARD & Co., Pontoosuc, Ill. Flowers and vegetables.

DAVID LANDRETH & SON, 21 and 23 South 6th st., Philadelphia, continue their Rural Register and Almanac, from year to year. The list of seeds grown at Bloomsdale, occupies but a small portion of the work, the rest being filled with really useful matter.

JOHN F. OTWELL, St. Mary's, Ont., is a market gardener, and publishes a list of the seeds he raises.

SCOBIE, REED, & SMITH, 137 Liberty st., Pittsburgh, Pa., are the successors in the seed business to the late J. Knox, and offer a full variety.

B. H. SHUMWAY, Rockford, Ill., sends his Annual Garden Guide and Seed Catalogue, which is fully illustrated.

W. H. SPOONER, 4 Beacon st., Boston, Mass.; Garden Guide and Seed Catalogue. We have mentioned the neatness and novel arrangement of this catalogue; this year is it as full and as well illustrated as formerly.

VANDERBILT BROTHERS, No. 23 Fulton st., New York, have a full and compact catalogue, which contains everything in the way of seeds, in plants, fertilizers, etc., needed for the farm or garden.

JAMES VICK, Rochester, N. Y. Last month, in view of the versatility of James Vick, we said "No one knows what he will do next." He has proved the truth of this assertion by presenting in the "Illustrated Christian Weekly," two pages of the most exquisite engravings that have appeared in any paper, illustrating his seed-farm and the doings thereon. What James Vick will do *next*, no mortal can foretell.

NURSERYMEN.

BURROW, WOOD & Co., Fishkill, N. Y. Fruit and forest trees, especially evergreens; also florists' plants.

ELLWANGER & BARRY, Mount Hope Nurseries, Rochester, N. Y. The extent and character of this establishment are too well known to require notice. A bound volume of their various catalogues is indispensable in the library of a working horticulturist.

H. E. HOOKER & BRO., Rochester, N. Y. General nursery stock, and a specialty in the Brighton Grape, which with them has proved eminently satisfactory.

HOOPES BROTHER & THOMAS, Westchester, Pa. This, one of the oldest and best nurseries in the country, keeps well up with the novelties in all departments, including that of greenhouse plants.

KNODLE BROS., Irving, Montgomery Co., Ill. Fruit and ornamental trees, and a large stock of hedge plants.

E. MOODY & SONS, Lockport, N. Y. This is one of our oldest firms, and has had for the last quarter of a century an excellent character for reliability.

WM. MORTON & SON, Allen's Corner, Me. General nursery stock, with especial attention to young evergreens for hedges and wind breaks.

JOHN S. COLLINS, Pleasant Valley Nursery, Moorestown, N. J. A large stock of small fruits, peach trees, etc.

R. H. HAINES, Malden, Ulster Co., N. Y. Malden is the great raspberry locality, and the list is very full in these and other small fruits.

E. & J. C. WILLIAMS, Montclair, N. J. Small fruits in general, with a novelty in the Duncan Strawberry.

FLORISTS.

DINGEE, CONARD & Co., send their rose catalogue, which is very full and complete.

THOMAS ELVERSON, New Brighton, Beaver Co., Pa., besides a general stock of florists' plants and bulbs, has flower and vegetable seeds, and rustic work.

GREENBROOK & PATERSON NURSERIES, Paterson, N. J. A great variety of rare plants, and special collections for amateurs.

R. C. HANFORD & SON, Columbus, Ohio, send a very full illustrated catalogue of plants. The same firm are also in the nursery business.

LONG BROTHERS, Buffalo, N. Y., in their catalogue for 1876, maintain the same neatness and originality that marked their former issues. The "Home Florist," by Elias Long, we had occasion to commend last year.

MILLER & HAYES, Germantown Ave., Phila., Pa., make a specialty of roses; their list includes the novelties of the last and previous years.

W. B. WOODRUFF, Westfield, Union Co., N. J., has besides florists' stock, a large variety of vegetable plants.

POULTRY.

THOMAS L. HALLWORTH, Cliftondale, Mass., has fowls and eggs in general, and Spangled Leghorns in particular.

IMPLEMENTS AND APPLIANCES.

ADAMS & FRENCH HARVESTER Co., Cedar Falls, Iowa, send out the Farmers' Memoranda, which serves as a useful memorandum books, and presents the merits of the harvester.

AMES PLOW COMPANY, Quincy Hall, Boston, and 53 Beekman st., New York. A most elaborate catalogue, in which nearly every implement used on the farm or in the garden is handsomely illustrated by engravings. This catalogue presents a novel feature, being in several distinct sections, each complete in itself, or the whole may be bound together. Thus one section contains carts, wagons, and all vehicles; another, their great variety of plows; another, all the haying implements, and so on.

MINARD HARDER, proprietor of the Empire Agricultural Works, Cobbleskill, N. Y., sends his catalogue of horse-powers, threshing machines, and other machines.

JACKSON & TYLER, 16 German st., Baltimore, Md., have a full list of tools and supplies which includes many things suited to the farmer's work-shop.

S. D. PAYNE, Rasota, Minn. Fruit-baskets of various kinds made from straw-board.

STANLEY RULE & LEVEL Co., 35 Chambers st., N. Y. Adjustable planes, miter boxes, and other useful tools peculiar to this establishment.

G. WESTINGHOUSE & Co., Schenectady, make Horse-powers, Thrashing-machines, Clover Hullers, etc.

EUROPEAN CATALOGUES.

WILLIAM BULL, London, Eng., so widely known for his enterprise in securing new plants, has a full catalogue of vegetable and flower-seeds.

EDWARD T. DICKINSON, Chatenay par Antony (Siene), France. Fruit-tree stocks, roses, young forest-trees, etc.

L. LEROY, Angers, France, colored plates of new pears.

The Double Poinsettia is now written about and figured in the English horticultural journals as a bran new thing, without reference to the fact that it was first secured to cultivation through the enterprise of our veteran horticulturist, I. Buchanan, Esq., and was first described in the *American Agriculturist* in 1873, accompanied by an original engraving drawn from the plant itself. Our British friends have a remarkable capacity for ignoring things that happen elsewhere.

The Western N. Y. Horticultural Society held its 21st annual meeting at Rochester, on January 5th and 6th, last. It was a very full gathering, and its proceedings, participated in by such men as J. J. Thomas, P. Barry, Geo. Ellwanger, and others of prominence, could not fail to be interesting. Measures were taken for an exhibition of the fruits of western New York at the Centennial, and officers for the current year elected, P. Barry being President, P. C. Reynolds, Rochester, Secretary and Treas., with a full force of competent associates. This is one of our most thoroughly alive societies, and we are glad to record its prosperity.

No Chromo, "The Strawberry Girl."—We have no more copies of this picture, and the special offer made of it to subscribers is therefore withdrawn. A few who have sent for it since the last were delivered, can be supplied, if they so desire, with the other chromos, in accordance with the advertisement "*For Your Home*," see third page of cover.

"Science at the Farmer's Club."—Now that nearly all the papers find it a waste of time and space, to report the doings of that remarkable body known as the N. Y. "Farmers' Club," we are deprived of much fun. There was never elsewhere seen just such "science" as is displayed here, and it has afforded us many a hearty laugh. Now and then we see a meeting of the club reported in some country paper, and we gladly seize upon it, sure to find somewhere "solid chunks" of Farmers' Club wisdom. In a report of a month or two ago, we find that white-wash was under discussion—they use a good deal of both white-wash and soft-soap at these meetings—and we read, "Mr. Ely said that he had found in his experience, that tallow was a good ingredient for white-wash—but Dr. Smith did not agree with him, as he thought that tallow did not mix well with lime." The Smith family is a large one, and this shows that there is at least one member in it that has a peculiar knowledge of matters and things. Tallow not "mix with lime!" Why some of our important manufactures are founded on the fact that it *will unite* with lime, and the compound is as insoluble as a piece of marble. Tallow is usefully added to white-wash for the purpose of forming a hard and permanent lime-soap. What a "Doctor!"

Judging Live Weight of Stock.—"M. S. D.," Anne Arundel Co., Md. There are no really trustworthy rules for estimating the live weight of stock by measurement. The rules in use are a sort of "rule-of-thumb" calculations from the girth, but these depend so much upon the condition and style of the animal, that they would be as apt to mislead as to inform any person who was not an experienced and accurate judge of stock. The basis of all the rules is the cubic contents of the carcass, with the allowance for offal.

Short-horns in the Dairy.—The dairy farm of Mr. Whitman, of Fitchburg, Mass., is stocked with pure Short-horns. One of these cows has given in one month 1,200 pounds of milk, or about 550 quarts, and in one year 9,200 lbs., or about 4,200 quarts. This yield represents about 900 lbs. of cheese in the year. A calf of one of these cows, 13 months old, weighed dressed 547 lbs.

Oats and Rye Chaff.—"Idle Wild," Orange Co., N. Y. Oat-chaff is a valuable fodder for milk cows. It should be scalded and mixed with a little meal, and then half-a-bushel makes a good feed for a cow. Rye chaff is not so good, on account of the beards, which stick in the cow's stomach when it is fed alone. It is an excellent packing material for ice-houses, and might be sold for that purpose, perhaps.

Fertilizers and Other Things sent to Try.—We receive numerous small parcels of fertilizers, with the request to try them on pot plants, and report; also cattle food of various kinds, as well as medicines for horses and other animals, including poultry. We have one general rule about such matters—we do not "try and report upon" any secret compound whatever; we have no time to expend in blind experiments, nor have we either any plants or animals that we do not value too highly, and have too much respect for, to treat them to any food or medicine the composition of which we are ignorant. Suppose we put some stuff on the earth of a pot, and the plant apparently grows with more vigor, what then? Our knowledge is not increased a particle, but if the maker of the secret compound can get us to say this on paper, (we think we see ourselves doing it!), it would be worth a nice sum to him. It is useless to send secret preparations to us, as we have no use for them.

Maple Sap Buckets.—"D. S., Jun.," Preston Co., W. Va. The quality of the maple sugar depends greatly upon the kind of vessels used in gathering the sap and boiling it down. Open wooden buckets are now being rapidly displaced by an improved sap-bucket, which is made by C. C. Post, of Burlington, Vermont. This is of tin, and has a cover to keep out leaves, pieces of bark, and other trash. It is made to hang upon the sap-spout, which is also made by Mr. Post. The spout is of galvanized iron, and fits into a half-inch auger hole bored into the tree. This saves all the damage to the tree by gashing it with axes, which soon kills the most thrifty ones. Besides, several holes may be bored in each tree, and the flow of sap thus much increased. There is not only more sugar made, but it is much better, and commands a higher price. The old-fashioned sap-spouts, troughs, and buckets, should be discarded when maple sugar brings 25 cents a pound, and an acre of sugar orchard may be made the most valuable acre upon the farm.

Materials for Compost.—"W. E. D.," Pasquotank Co., N. C. It is very profitable labor to gather leaf-mold and pond-muck, to compost with stable manure. "Pine straw," pine tree leaves, is not of much value, yet in the absence of other materials, will serve some useful purpose as an absorbent.

Fertilizers for Grass.—"O. B." An old sod of orchard grass is apt to be bare in spots and bunchy, as it is the habit of this grass to grow in tufts. To renovate this sod, some fresh seed should be sown soon after the field is mown, and a harrow run over it to open up the surface. For a fertilizer, where no manure can be procured, 50 bushels of wood ashes, and 100 pounds of nitrate of soda per acre would be useful. To secure a good set of new seeding, Peruvian Guano is usually a very good artificial fertilizer; say 150 lbs. per acre.

Centennial Sweet Corn.

The most profitable Early Sweet Corn for market or family use. It unites earliness, quality, productiveness, and large-sized ears for market. We give testimonials.—"After repeated trials for several years of the different varieties of early and late Sweet Corn for market and home use, I have found none that will compare, in quality, size, and earliness, with that I bought of you last spring. It is ten days earlier than 'Darling's Extra Early,' and grows double the size, is very sweet and prolific. It is the greatest acquisition of the day. E. H. Judd, Market Gardener, S. Hadley Falls, Mass." —"There has been nothing in the Springfield, Holyoke, Chicopee, and Westfield markets, that can compete with it. L. L. Hooker, Westfield, Mass."—"For its large ears, uniformly well filled, and its earliness for market, the best I ever raised. M. L. Gaylord, East Hampton, Mass."

Per Package, 25 cts.; 5 Pks., $1.00; by mail, Post-paid.
Extra large late Sweet Corn at the same rate.
A. L. CLARK & SON, East Hampton, Mass.

This superb **Illustrated Floral Work**, describing over *500* varieties of *Flower and Vegetable Seeds, Bulbs, etc.*, will be sent you (with one packet of *New Dwf. Bouquet Aster, Blotched and Striped Petunia, or Extra Mixed Pansy*), for only **10cts.** The above *three* or any *six* 5c pkts, for 25 cts and the TRIBUTE FREE. W. H. REID, Box 97. ROCHESTER, N. Y.

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GARDEN, FLOWER & FIELD SEEDS,
reliable, fresh and pure, at reasonable prices.
(ESTABLISHED 1839.)
B. H. STAIR & CO.,
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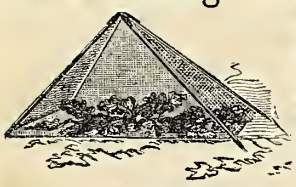
$125 IN CASH PREMIUMS.

For particulars see my Illustrated Catalogue for 1876, containing all the **NEW** and **BEST** varieties of Strictly **FINE GARDEN SEEDS**, carefully grown from **SELECTED** Stocks, and the largest and **BEST** collection of **NEW** and **CHOICE SEED POTATOES** ever offered, sent free to all applicants. Do not fail to see it.
J. R. V. HAWKINS, Goshen, New York.

SEEDS

FOR GARDEN & FIELDS,
RELIABLE AND TRUE. Send to
TOLEDO SEED HOUSE,
AUGUSTUS B. TABER, Toledo, O.

Bates' Folding Vine Protector.



This Protector was introduced in 1859, and parties that had them in that year have protected their plants every year since, and they are good now. Send for Circular. Also Imperial Pekin Ducks eggs, from pure stock, $5 per doz.
CALEB BATES,
Kingston, Mass.

SEND FOR DESCRIPTIVE CATALOGUE of **Plants, Roses, etc.**, by mail. 24 pages of information for all interested in Flowers, Fruits, etc., *Free*. 7 Roses, or 8 Grape Vines, for $1.
WM. H. MOON,
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APPLE and other FRUIT TREES, GRAPE-VINES, HEDGE PLANTS, ORNAMENTAL PLANTS, GREEN-HOUSE and BEDDING PLANTS for sale. Stock SOUND and HEALTHY. PRICES **low.** Great inducements to **Granges, Clubs,** and **Dealers** for CASH. Spring Price-list now ready. **Free** to all applicants.
Address SCOTT & MAXWELL, Chenoa, Ill.

SMALL FRUITS A SPECIALTY. 300 Acres in Fruits. No. 1 Plants of all best sorts at very lowest rates. See Page 111. Send for prices to
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CHESTER COUNTY MAMMOTH CORN yields 75 to 125 bushels. 1 lb., post paid, 50c. **BLOODED** Cattle, Sheep, Hogs, Poultry, Dogs, etc. Circular FREE. W. ATLEE BURPEE, Philadelphia, Pa.

LANE'S Improved Imperial **Sugar Beet** Seed. 1 oz. 10c. ¼ lb. 25c; 1 lb. 80c.; 4 lbs. $3. **Snowflake, Eureka,** and other **Potatoes and Seeds** at low prices. Send for *Catalogue*. DAVID R. WOOD, Morrisville, Vt.

Jenkins' Nurseries.—Sugar Maple, Linden, Transp. Evergreens, very low. Magnolia, $15 p. M.; Concord, $10, $15 & $20 p. M. Apple Seed, Pyrus Japonica, &c. Send for Catalogue. Ad. J. Jenkins, Winona, Columbiana Co., O.

BEAUTIFUL Illustrated **BOOK FREE** OF CHOICE Fresh Seeds, Warranted best in the world. Lowest prices, send for free book. R. H. SHUMWAY, Rockford, Ill.

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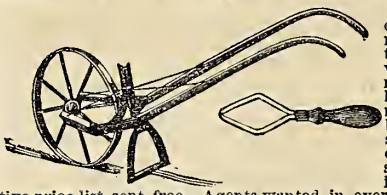
For sale a Seed and Floral Establishment, doing a profitable business, and situated in the best part of the city; has a large trade in **Floral Designs** and **Cut Flowers.** Easily managed. Will sell either with property, or give a long lease on favorable terms. The buildings were erected especially for the business. Good reasons given for selling. Established 9 years. Apply to D. GRINTON,
67 Chippewa St., Buffalo, N. Y.

Bancroft Patent Wheel Hoe.



One man can do more work than ten with common hand hoe, and nothing but a pleasure in comparison to run it. Descriptive price-list sent free. Agents wanted in every town. I also have an immense stock of Deciduous and Evergreen Trees of all sizes and kinds.
Address **THOMAS JACKSON,**
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Holbrook's "VETO" SEED DRILL & "NEW"
Hand Cultivator sow and cultivate all kinds vegetables. Do work of 10 men. Best and cheapest. Price $12.50 combined.

Circulars Free. Made by E. E. LUMMUS & CO., Boston, Mass.

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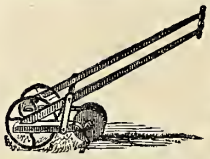

Every **Gardener, Onion Grower** and **Nurseryman** needs it—saves much weeding—protects plants from being covered—does the work of *six* men. *Send for descriptive Circular.*
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Matthews' Garden Seed Drills

and **Matthews' Hand Cultivators,** are the most reliable, durable, popular and salable ever produced. Sold separate or combined. Send for Circular. Made only by
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GENUINE PERUVIAN GUANO, $60 per ton. Russell Coe's Ammoniated Bone Superphosphate of Lime, $45 per ton, Double Refined Poudrette, $25 per ton. Ground Bone, $30 and $35 per ton. Land Plaster, packed in bbl., $12 per ton. Dealers supplied with any of the above standard Fertilizers at lowest trade price. Delivered to Rail-Road or Boat free of cartage.—Order direct of
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The Universal Fertilizer

is the cheapest and best manure in use. $50 per ton. Read Dr. Hexamer's opinion in our new circular.
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Are made after Formulas of Prof. Stockbridge of Mass. Agricultural College, from pure chemicals, and give large returns at *small cost*. Pamphlets with the formula, prices, &c., FREE. W. H. BOWKER & CO., Sole Agents, 43 Chatham St., Boston.

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Do you want to double your crops?
Do you want early and large vegetables?
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Price $25 per ton. Send for circular to
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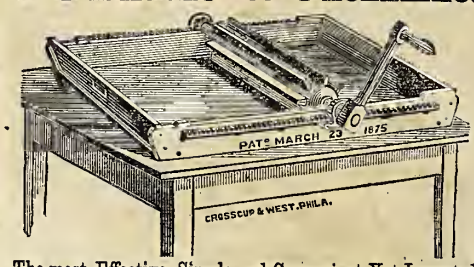

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"It is a machine that should be in every dairy, small and great."—*William Crozier, Northport, L. I.*
Send for circular and price lists.
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Portable Engines and Boilers, Vats, Hoops, Presses, Screws, Cans. Every article needed in Cheese Factory or Creamery. Send for Circulars.
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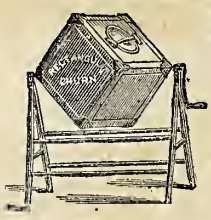

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Butter-worker,
Without flouts or agitators of any kind. 5 Sizes made.
Agents wanted where we have none. Send for Circular.
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HARDIN'S IMPROVED METHOD OF SETTING MILK for MAKING BUTTER,

Recommended by Hon. X. A. Willard, Prof. L. B. Arnold, The American Dairymen's Convention, &c.
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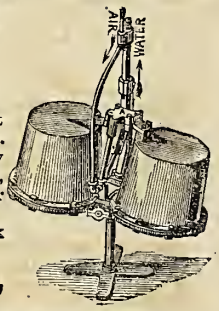

Water driven to any height and distance by *compressed air.* Country houses supplied cheaply and certainly for bath-rooms, water closets, hot and cold water faucets, etc.
Plenty of fresh water for stock on farms. Address
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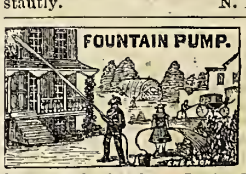
Force Pump, Plant Syringe.—$4.50.

Page's Improved, with Graduating Sprinkler—will throw water 50 feet, and change to coarse spray or fine mist instantly. N. PAGE, JR., Danvers, Mass.



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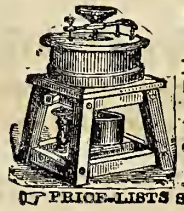

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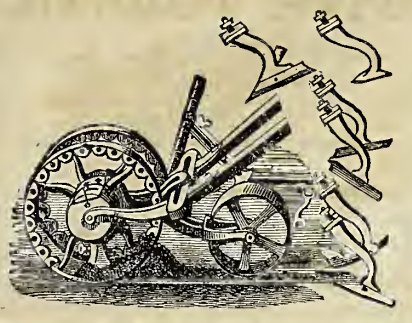

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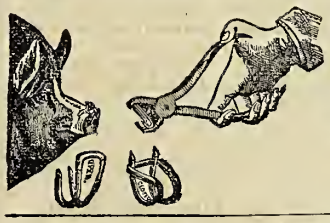
They "SOW *like a charm;*" *no packing* of seed in the hopper, *no crushing* it, *no difficulty* with *chaffy* or *soaked* seeds, *no watching, no pausing* or *waste* at the ends, *no irregularity* in depth, *no skips, no springs* or *gearing* to wear out, *no noise*, NO EQUAL. No. 2, holds 2½ qts.—No. 3, holds ½ bush. and sows Fertilizers.

THE COMBINED machine, the AGRICULTURIST PREMIUM, (see Premium List), holds 1 qt., and "*is a perfect seed-sower.*" It has one pair of hoes for general work, one for heavy furrows, a plow and subsoiler. THE DOUBLE WHEEL HOE (see cut) works *easier, better, and six to twelve times faster* than the hand hoe. Wheels can be set two, six, or ten inches apart. It has three different pairs of hoes, and a pair of subsoilers; ALL our blades are steel, tempered and polished. Will work 6, 9, or 10 inch rows, TWO AT ONCE, *often saving cost in a day.*

Our NEW polished steel blade HORSE HOE, perfected after ten years of experiment, and trial by our S. L. Allen, a practical farmer. *Saves* most of the hoeing, and *makes the remainder easy;* leaves the ground *level or ridged* as desired, *opens furrows, hills,* and cultivates shallow or deep, and is a thorough weed killer. Especially adapted to the wants of *Market-Gardeners, Broom Corn, Tobacco, Cotton, Rice, and Root* Growers, and all lovers of thorough work: should be owned *by every farmer.* Send for cuts with full description and testimonials, free. *Mention this paper.* S. L. ALLEN & CO., Sole Manfrs., 119 S. 4th St., Phila., Pa. **We must have A LIVE AGENT in every town.**



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The only Ring invented that will effectually prevent Hogs from Rooting. Being a Double Ring, and having no sharp points in the flesh, it does not cause irritation or soreness, as in other Rings. The smooth part of the wire being in the nose, it heals rapidly. One of our rings being equal to two or three of any other ring, makes this ring cheaper than the cheapest. Time and money saved in using the Champion. One operation, and the work is done.

Price of Hog Ringer, 75c. each; Coppered Rings, 50c. per 100; Tinned Hog Rings, 60c. per 100; Hog Holder, 75c. each.

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ASK YOUR DEALER FOR THEM.

THE MITCHELL WAGON.

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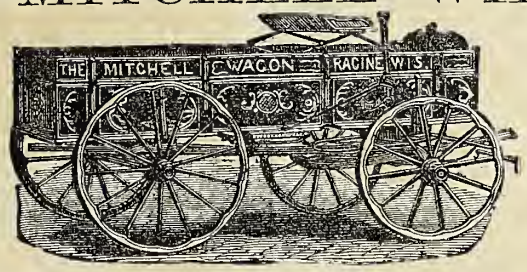
The original, well known RACINE WAGON.



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All work fully warranted.

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FOUST'S HAY LOADER, Improved for 1876, including Wind-Break Attachment. Warranted to pitch a ton of hay from the winrow in five minutes, and take it as clean as by the hand fork. Adapted to all ordinary meadow land, and to any farm wagon. Manufactured by STRATTON & CULLUM, Agricultural Works, Meadville, Pa. Send for Descriptive Circulars early.

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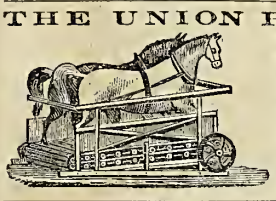

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First-class small Thresher—four to six horse Lever-power. Will thresh and clean twenty to thirty bushels wheat per hour.

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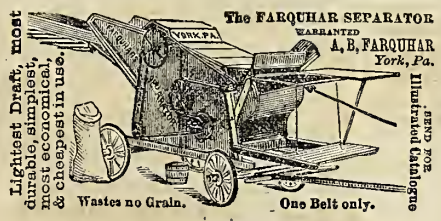
Cane-mills and Evaporators, Steam Engines, Church, School, and Farm Bells. Circulars sent on application.



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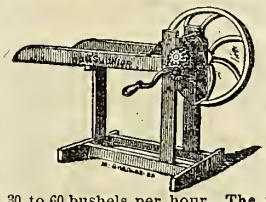

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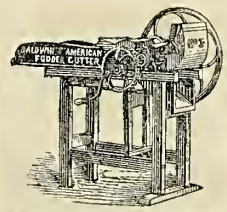

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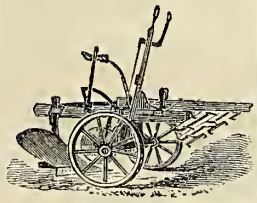

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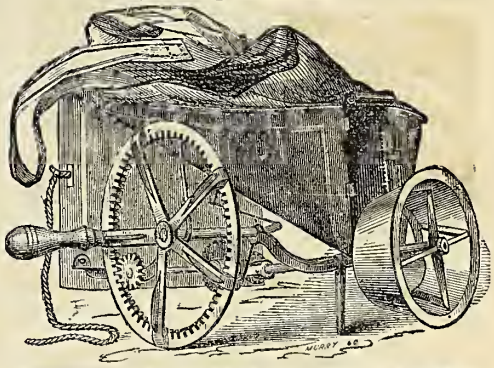

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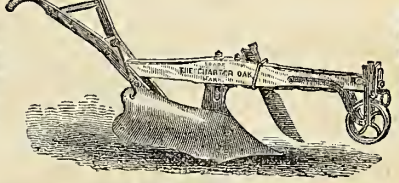

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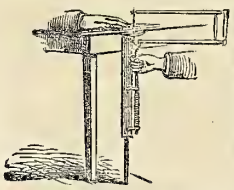

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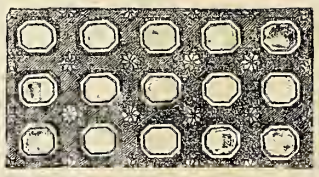

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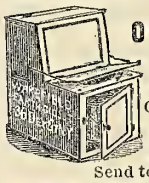

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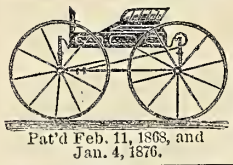

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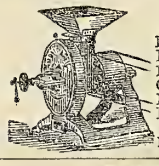

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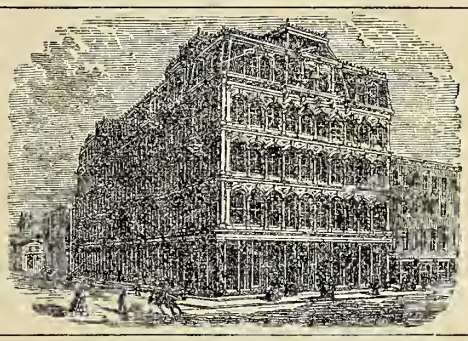

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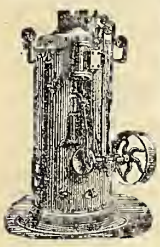

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Nos. 346 and 348 Broadway,
JANUARY 1, 1876.

Amount of Net Cash Assets, Jan. 1, 1875, - $27,145,777 51

REVENUE ACCOUNT.

Premiums and annuities	$6,069,002 81	
Interest received and accrued	1,870,658 34	—7,939,661 15
		$35,085,438 66

DISBURSEMENT ACCOUNT.

Losses by death	$1,524,814 81	
Dividends and returned premiums on canceled policies	2,481,696 96	
Life annuities, matured endowments, and reinsurances	182,400 83	
Commissions, brokerages, and agency expenses	361,918 06	
Advertising and physician's fees	87,591 26	
Taxes, office, and law expenses, salaries, printing, etc.	280,114 03	—4,918,535 97
		$30,166,902 69

ASSETS.

Cash in Trust Company, in bank, and on hand	$1,768,291 26	
Invested in United States, New York City, and other stocks (market value, $7,633,244)	7,154,191 05	
Real estate	1,820,240 53	
Bonds and mortgages (secured by real estate valued at more than double the amount loaned, buildings thereon insured for $15,717,000, and the policies assigned to the Company as additional collateral security)	17,685,597 50	
Loans on existing policies (the reserve held by the Company on these policies amounts to $4,090,586)	885,728 82	
Quarterly and semi-annual premiums on existing policies, due subsequent to Jan. 1, 1876	463,269 64	
Premiums on existing policies in course of transmission and collection (estimated reserve on these policies $320,000, included in liabilities)	105,341 54	
Agents' balances	27,111 49	
Accrued interest to Jan. 1, 1876, on investments	257,130 86	—30,166,902 69
Excess of market value of securities over cost.		479,052 95

Cash Assets, Jan. 1, 1876, $30,645,955 64

APPROPRIATED AS FOLLOWS:

Adjusted losses, due subsequent to Jan. 1, 1876	303,165 00	
Reported losses awaiting proof, etc.	144,598 66	
Reserved for reinsurance on existing policies; participating insurance at four per cent Carlisle net premium; non-participating at five per cent Carlisle net premium	27,390,396 44	
Reserved for contingent liabilities to Tontine Dividend Fund over and above a four per cent reserve on existing policies of that class.	308,138 81	—28,146,298 91

Divisible Surplus, - - 2,499,656 73

From the undivided surplus of $2,499,656 73 the Board of Trustees has declared a Reversionary Dividend, available on settlement of next annual premium to participating policies proportionate to their contributions to surplus. The cash value of such reversion may be used in settlement if the policy-holders so elect.

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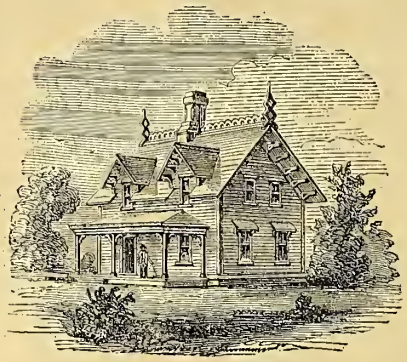

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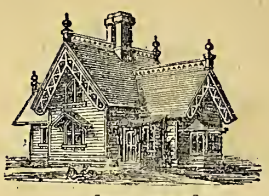

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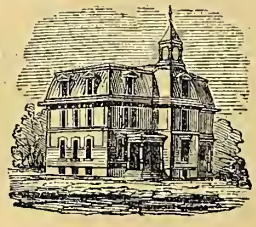

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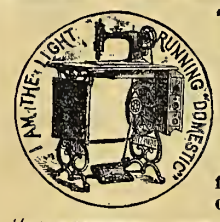

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How Manure Should be Applied.—

"C. G. P.," Ohio. When coarse manure is applied to a crop, it decomposes very slowly and we fail to get the whole benefit of it for the first crop, and may lose some of its value. But when it is made completely available before it is applied, the first crop is enabled to appropriate all that it wants, and the surplus remains for the next crop. To get the greatest benefit from it, therefore, manure for shallow-rooted plants, such as wheat, oats, etc., should be applied near the surface and mixed with the soil by harrowing, just before the seed is sown, so that the young plant can reach its food when it will do it the most good. For deep-rooted gross feeding plants, as the various roots, potatoes, etc., the manure should be covered with a light furrow in the drill, and a little extra fine fertilizer be placed near the seed.

Calendar for April.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n sets.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	S	5 43	6 26	1 45	5 45	6 24	1 37	5 46	6 23	1 29
2	S	5 42	6 28	2 39	5 44	6 26	2 32	5 45	6 24	2 25
3	M	5 40	6 29	3 17	5 42	6 27	3 11	5 43	6 25	3 6
4	T	5 38	6 30	3 50	5 40	6 28	3 46	5 41	6 26	3 41
5	W	5 36	6 31	4 16	5 38	6 29	4 14	5 40	6 27	4 11
6	T	5 34	6 32	4 39	5 36	6 30	4 37	5 38	6 28	4 36
7	F	5 32	6 33	5 0	5 34	6 31	5 0	5 36	6 29	5 0
8	S	5 31	6 34	rises	5 33	6 32	rises	5 35	6 30	rises
9	S	5 29	6 35	7 47	5 31	6 33	7 44	5 33	6 31	7 40
10	M	5 27	6 36	8 56	5 29	6 34	8 51	5 31	6 32	8 46
11	T	5 26	6 37	10 1	5 28	6 35	9 55	5 30	6 33	9 29
12	W	5 24	6 38	11 10	5 26	6 36	11 3	5 28	6 34	10 56
13	T	5 23	6 40	morn	5 25	6 37	12 0	5 27	6 35	11 52
14	F	5 21	6 41	0 8	5 24	6 38	morn	5 26	6 36	morn
15	S	5 19	6 42	0 59	5 22	6 39	0 51	5 24	6 37	0 43
16	S	5 18	6 43	1 40	5 21	6 40	1 33	5 23	6 38	1 26
17	M	5 16	6 44	2 11	5 19	6 41	2 6	5 22	6 39	2 0
18	T	5 14	6 45	2 41	5 17	6 42	2 36	5 20	6 40	2 32
19	W	5 13	6 47	3 4	5 16	6 44	3 1	5 19	6 41	2 58
20	T	5 11	6 48	3 37	5 14	6 45	3 35	5 17	6 42	3 33
21	F	5 10	6 49	3 48	5 13	6 46	3 43	5 16	6 43	3 47
22	S	5 8	6 50	4 45	5 11	6 47	4 46	5 14	6 44	4 47
23	S	5 6	6 51	5 32	5 10	6 48	5 34	5 13	6 45	5 36
24	M	5 5	6 52	sets	5 9	6 49	sets	5 12	6 46	sets.
25	T	5 3	6 53	9 4	5 7	6 50	8 58	5 10	6 46	8 52
26	W	5 2	6 54	10 24	5 6	6 51	10 17	5 9	6 47	10 10
27	T	5 1	6 55	11 35	5 5	6 52	11 27	5 8	6 48	11 19
28	F	4 59	6 56	morn	5 3	6 53	morn	5 6	6 49	morn
29	S	4 58	6 58	0 34	5 2	6 54	0 27	5 5	6 50	0 20
30	S	4 56	6 59	1 18	5 0	6 55	1 11	5 3	6 51	1 5

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
1st Quart	1	1 28 mo.	1 16 mo.	11 4 mo	0 52 mo.	0 22 mo.
Full M'n	8	2 55 ev.	2 43 ev.	2 31 ev.	2 19 ev.	1 49 ev.
3d Quart.	16	3 53 ev.	3 41 ev.	3 29 ev.	3 17 ev.	2 47 ev.
New M'n	24	2 19 mo.	2 7 mo.	1 55 mo	1 43 mo.	1 13 mo.
1st Quart	30	5 43 ev.	5 31 ev.	5 19 ev.	5 7 ev	4 37 ev.

AMERICAN AGRICULTURIST.

NEW YORK, APRIL, 1876.

With the second month of spring comes a rush of work to the farmer. Many things need to be done *at once*, and the April showers and last storms yet lingering in the lap of spring, try the farmer's patience. The man who cultivates the ground as a business, needs to be a patient man, for anxieties and disappointment meet him at every turn and every season. There are those who cannot wait until the right moment, but who begin too soon, and consequently have to finish too late. One may very easily plow a field too soon, and delay his sowing, or greatly damage the prospects of his crop. The well drained fields may be plowed as soon as the surface cracks and crumbles, but some heavy low soils may not be fit to turn over for some days after the surface appears dry. Seeds will not germinate until there is sufficient warmth in the soil, although some, such as oats, spring-wheat, or clover, will remain dormant without injury. Therefore the condition of the soil must be closely watched before it is worked, and when it is ready, then go ahead.

Hints about Work.

Weeds are the farmer's most inveterate enemies. Just now they look very harmless; but if we recall the appearance of the fields last fall, the tax they draw from the crops may be easily appreciated. As a beginning of the season's work, let us resolve to let no weed escape, and let the word WEEDS be noted in the memorandum book in conspicuous letters, at the head of every page. Then let the question how the weeds may be kept down, be the subject of frequent study. One of the effective means of doing this, will be to.

Harrow the Fall Wheat and Rye.—This should be done as early as possible after the surface is dry. The stirring of the ground will start the weeds into growth, and a second harrowing in ten days afterwards, will kill them by thousands. At this second harrowing the clover seed may be sown. We have found the best harrow for this purpose to be Thomas', the backward-sloping teeth of which passes over the young wheat plants without injury, and help to cover with fresh soil, those which have been heaved to the surface by the late frosts.

Sowing Clover Seed.—Something ought to have been learned by the frequent failures to get a catch of clover of late years. The seed takes best upon good soil, that has been harrowed and freshened up previously, and fails most frequently when sown upon poor soil, and on the bare hard surface that has been packed by the winter's storms. This old careless way of seeding ought then to be abandoned, along with the hope of getting a stand upon soil too poor to grow anything else. We have never failed of a "catch," by sowing when the earth was full of little cracks made by a slight freezing; the thawing earth covers the seed. Clover is a good thing with which to feed and restore a soil with, but land can easily get past recovery in this way.

Spring Grains.—All the spring grains are best to be sown early, but what *early* is, depends greatly upon the character and condition of the soil. There are early soils, light, warm, and naturally well drained; on these barley and oats may be sown several days sooner than on cold, heavy clays. As a rule our earlier sown crops have been the best, even upon our heaviest fields, and to have the work well forward, is a temptation to hurry the seed into the ground as soon as the soil is in proper condition for it, but not sooner.

Barley or Oats can be sown upon a fall plowed oat stubble, as soon as the surface is dry, and thus, by plowing the ground in the fall, a gain of valuable time is made in the spring. Those farmers who are now forced to wait for the ground to dry before it can be plowed, may learn a hint for the next season. Make a note of this.

Peas.—For this crop, in the northern states, Canada grown seed should be procured, as this is free from the pea-weevil, which bores into much of the seed and injures it. Very few of the seed is destroyed by the weevil, but in sowing infested seed, we sow the enemy along with it, and perpetuate its existence. Stirring the seed in scalding water for a minute or two, pouring off the water and drying, a great many of the pupa of the weevils may be destroyed. It is therefore wisest and best to procure seed free from the weevil. Peas should be sown with a drill.

Fodder Crops.—For fodder crops the following may be sown: 2½ bushels of oats, with 1½ bushel of peas, mixed together, or 2 bushels of barley, and 1½ bushel of tares, together. Spring wheat and rye are not worth sowing when oats or barley can be obtained, as they are deficient in leaf, and make a light yield. These crops may be sown in succession every 10 days, for soiling or for dry fodder, any time through this month.

Potatoes have paid best with the writer on fall plowed and winter manured land, and next on a top-dressed clover or grass-sod. The seed and labor for a crop of 300 bushels, cost no more, except some little extra in harvesting, (but the latter not at all in proportion to the excess of crop), than a crop of 75 bushels. At this time of low prices it is incumbent upon us that we consider this fact well, and act accordingly. None but perfectly sound seed should be planted.

Carrots.—This is a crop that deserves more attention than it receives, for its value as a healthful food for all kinds of stock. A prejudice exists against it, on account of its slow germination, which enables weeds to get the start of it; the length of the roots, and the need for clean culture. By sowing some radish seed in the drill with it, and having the soil deeply plowed and mellowed, and rich, and procuring the seed of the Short Horn variety, these difficulties will be removed. The radish will start and make the row visible, when the horse hoe can be used before the carrots are seen. The foster radish crop is consumed by the flea, or easily taken out afterwards by hand, when it will pay for the trouble. The white and yellow Belgian carrots, will yield heavier crops, and are late and good keepers, but are much longer.

Manure and Fertilizers.—Top-dressing at this season, with anything but the very finest and best manure, except on sod for corn, is a waste of time and labor. The effect comes too late to benefit the crop. Some active commercial fertilizer should

be used instead. For grass or wheat 150 lbs. of nitrate of soda, or the same of guano, per acre, would be a good dressing. In using commercial fertilizers, it is well to make experiments as to quantities and varieties for different soils and crops.

Corn.—For the corn crop we have found the sooner the planting is done after the plowing, and while the soil is moist and fresh, the better. North of Virginia the next month is ample time to plant corn. A top-dressing of coarse manure upon the sod this month, would be an excellent preparation for this crop.

Flax.—Many western farmers have made this a profitable crop, the seed being in demand at the oil mills at good prices. It is a useful crop to mellow and clean the soil, and may precede fall wheat with advantage. A bushel and a half of seed per acre, may be sown this month upon a corn-stubble.

Live Stock.—For hints about live stock, see last month's *American Agriculturist.* Every reader of these hints should keep his papers and refer to back numbers, which will always recall something that has been forgotten.

The Dairy.—The Ohio dairymen have done a wise thing in resolving to make no cheese in April; in carrying the resolution into practice, they will do a still wiser thing. The milk in April makes poor dairy goods, and if given to the calves, would be more profitable to the owners. Dairymen should

Raise the Best Calves, and thus gradually raise the quality of their herds. A good calf is well worth a month's fresh milk, and if their coming was timed for April, they could have the April milk, and the dairyman be richer and they the better for it.

Sheep.—Early lambs should be pushed forwards for market, by giving extra feed to the ewes and increasing the flow of milk. To feed the lambs meal or other food, for which their stomachs are as yet unprepared, hinders their growth. (See hints for last month).

Swine.—Young pigs may be pushed as fast as possible. When a week old they may be taught, without difficulty, to drink milk from a shallow pan, and in doing this the young animals may be tamed and rendered perfectly docile. To have tame and tractable animals about the farm, will add much to their value, and the ease and comfort in tending them. Feed the nursing sows well, and keep them warm. See hints for previous months.

The Roller should be used with judgment. It is a valuable implement, but sometimes it is used injuriously. It is most effective upon dry soils; when the soil is damp, clods are easily crushed, but the surface is packed and crusted. Meadows on the contrary, should be rolled while moist and soft, that stones and rough places may be pressed into the soil, and the surface levelled for the mower. Fall grain may be rolled with advantage, the day after it is harrowed, if rain has not fallen.

Tools.—In purchasing tools and implements, those that are lightest, other things being equal, should be chosen. To handle a heavy tool is a waste of muscle, now that steel is in universal use for the best kinds. Even a hoe should be sharp and bright to be most effective, and in a mower a dull knife will double the draft. This is equally true of horse-power machines, and of hand-tools.

Poultry.—See article elsewhere about nests. In the general spring cleaning up, the poultry houses, roosting poles, and nests, should be thoroughly coated with hot lime-wash, with a little carbolic acid in it. Preserve early chicks from damp, by no means let them be exposed to cold rains. Keep ducks shut up until they have dropped their eggs; they do this early in the morning, and if not watched will drop them anywhere but in their nests. It is not worth while to set a young goose, they are poor sitters. If turkeys are kept, the best only should be chosen; a mature bronze "gobbler" of 25 pounds or more, is the cheapest kind to have.

Cleanliness is imperative everywhere about the house, out-houses, barns, and stables; health is generally valued most when it is lost, and the quickest way to lose it is to neglect cleanliness. The health of the farmer, as well as that of his stock, is a matter of money to him, and economy, if nothing else, should induce him to care for it in every possible way.

Work in the Horticultural Departments.

It now looks as if we shall have an unusually early spring, and abundant time for tree planting as well as for getting in early vegetables. Seeds, trees, and all implements needed must be ordered soon, else delay will be caused by their not being on hand. For main crops depend upon the standard, well-tested varieties, but it adds much to the interest of gardening to try all the novelties one can afford.

Orchard and Nursery.

The very full notes of last month should be consulted now, as in many localities they are timely.

Planting.—Set the trees as early as possible. A good tree will have abundant roots and well ripened wood. If there is a nursery in the vicinity, it may be cheapest to arrange with the proprietor to allow you to go and select and dig the trees personally, the first cost may be somewhat more, but the care in taking up, and time they are out of the ground is so little, that it will be found profitable.

Grafting.—Many trees which now bear fruit only for cider, would in a few years, if grafted, produce crops of good marketable fruit. The present month is a good one in which to do this, and numerous directions with descriptive cuts, have been given in the *American Agriculturist* in former volumes.

Cions should have been cut earlier, but it may be done now if the buds have not started; store them in sawdust in the cellar until wanted for use. Most of the larger nurseries offer cions of the standard varieties for sale at very cheap rates, and as they can be sent by mail, it is a very convenient way for securing choice sorts.

Cherry and Peach Stones which were stored in boxes or bedded in the fall, should now be sown in rows, without breaking off the sprouts.

Insects.—Take especial pains to destroy all eggs found upon the branches and trunks of fruit-trees. Examine the ends of the smaller twigs for eggs of the tent caterpillar, which may be readily seen before the leaves appear, in the form of broad rings glued upon the branches. Scrape off all dead bark from the trunk and large limbs, and wash with a strong solution of soft soap. Bark-scale is a most destructive insect in many sections of the country, and if only a few young trees are affected, it will be best to dig them out root and branch, burn them, and set others in their places. When very abundant, use oil as noted on page 139.

Fruit Garden.

Where land is abundant, it is very desirable, to have the small fruits and trees in an enclosure distinct from the vegetable garden, as the young trees and bushes are likely to shade the vegetables too much. An amateur with a small plot can grow dwarf pear, apple, peach, and other trees in the various styles, such as oblique and horizontal cordons, pyramids, wine-glass, and other forms described in the works on fruit culture, and find much interesting occupation therein, but in this country the refinements of horticulture are little cared for, and the fruit garden is kept mainly for its fruit.

Blackberries—The roots spread so fast and far that where it is possible, they should be planted in a spot a little aside from the rest of the garden, so that they will not interfere with the growth of other plants. Provide strong stakes to which to tie the canes, and do not allow them to grow more than five feet high, with lateral branches cut back to 18 inches. Set from 6 to 8 feet apart, each way.

Raspberries.—Set in rows from 4 to 6 feet apart, and 3 to 5 feet in the row. One of the best ways to support them is by a strong wire stretched along the line of the row and fastened securely to well-braced posts at each end; provide a support of some sort at distances of 15 or 20 feet apart to keep the wire from sagging where the rows are long. As the canes grow to the top of the wire, tie them to it in fan-shape, cutting them off at the hight of four feet, and laterals at 18 inches; four canes at most to a stool, and less even the first year, are enough, if the plants are weak.

Strawberries.—The easiest way to have a supply of this fruit is to renew the bed, as described last month. Make new beds, setting the plants in rows 3 feet apart and 1 foot in the rows. In small gardens the plants may be set closer, with the runners cut off as fast as they appear; and if the soil is well enriched every year, the bed will bear abundantly for 4 or 5 years.

Grapes.—Let every person who has a bit of ground, plant one grape vine at least, this spring, as with a little care in training and pruning for two or three years, it will seldom fail to produce an abundance of fruit. The soil for grapes should not be rich with stable manure, but use ground bones, or wood ashes. The first year allow only one shoot to grow, and in the fall cut this back to two or three buds; the next season allow only two of these to grow. The first year a vine bears, only allow two bunches to each shoot, as more will exhaust the vine. There are many other ways of training, and the vine can be adapted to the locality.

Dwarf Trees which require any pruning, should be attended to now, before the buds start; avoid cutting off any large branches until June, when they may be taken off with safety; cover the wounds with shellac varnish or melted grafting wax.

Kitchen Garden.

The care of hot-beds and cold-frames, and sowing of seeds for early plants, will be the work in northern gardens. Manure should be turned over often, and made fine before applying; it is difficult to sow seeds in a soil where the manure is coarse, as it will impede the rake or seed-sower.

Asparagus beds that were covered with manure in the fall, should have the coarse litter raked off, and the fine forked in early, before the plants start.

Beans.—Do not plant before the soil gets warm, as the cold, damp soil will rot the seeds.

Beets.—Sow early and thickly, so that the thinnings may be used as spinach. Frosts do but little injury.

Cabbages.—Sow in the hot-bed for medium early, and set out plants from the cold-frame in well manured soil; moderately moist and strong soil is much better than a light, sandy one.

Cauliflowers.—Set out plants from the cold-frame the same as cabbages, and give them a rich place. They must be either an early or a late crop, our strong sun being injurious to their growth.

Carrot.—Sow Early Horn on light soil.

Celery.—Sow seeds in hot-bed if early plants are wanted, or in the open ground.

Corn will not stand frost, or damp, cold soil; do not plant before the ground is dry and warm.

Cucumbers may be started in pots or squares of sod in the hot-bed, and set out when the weather has become suitable, or if one has hand-frames, a few hills may be planted for extra early.

Cress, or *Pepper-grass.*—Sow for use as a salad. If the black "flea" is abundant, it is of no use to try it.

Egg Plant.—Seeds may yet be sown in hot-bed. Do not set plants in the open ground until it is thoroughly warmed. Look out for the "Potato Beetle," which attacks these plants even in preference to the potato, and will soon destroy them if not hand-picked.

Kohl-Rabi.—This excellent vegetable is seldom seen in gardens; its culture is as easy as that of turnips, and no one who has tried it will fail to have it every year. It should always grow quickly, and be eaten while young.

Leek.—Sow the same as onions. When large enough, thin to 6 or 8 inches in the row, and set out the thinnings at the same distance.

Lettuce.—Set out plants from the cold-frame in rich, warm soil, and sow seeds for second crop.

Martynia, Melons, and Squashes, should not be planted until the weather is settled and the ground warm.

Onions.—Sow as early as possible in rows 12 to 15 inches apart, in soil which has been highly manured. Plant sets and potato and top onions.

Parsley.—Sow in hot-bed after soaking in warm water for a few hours, or in open ground.

Parsnips.—Sow new seed at once in rich soil.

Peas.—Sow Dan. O'Rourke, or Carter's First Crop, for the earliest, just as soon as the ground can be got ready; double rows six inches apart are best for convenience in "sticking." Do not sow the wrinkled sorts until the ground is dry, otherwise they will rot. The Alpha is the earliest of these. Have a plenty of brush for sticking the peas as soon as they are up; if left until they fall over, they never do so well.

Peppers are treated the same as Egg Plants.

Radishes are not injured by cold, and should be sown early, in rich, light soil, in rows 12 in. apart.

Salsify and Scorzonera.—Sow in rows 15 in. apart, as early as possible. The seeds are of such a shape, that they sow better by hand than with a drill.

Spinach.—Sow for second early in rows one foot apart. The fall sown beds must have the soil worked between the rows, to hasten the growth.

Tomato.—Sow seeds in hot-bed. Transplant those large enough to boxes or a cold-frame. Provide materials for trellises.

Turnips.—Sow a few early kinds; as soon as up, sift on plaster or fine ashes, to keep off the "flea."

Potatoes.—Plant as soon as the soil is dry enough. Look carefully after the "potato beetle," and destroy them by hand-picking or Paris green, prepared according to directions given in previous numbers of the *American Agriculturist.*

Lawn and Flower Garden.

Under this head are included the ornamental portions of a place, whether large or small. Those who have large places keep a competent gardener, and our hints are for those who look after their grounds themselves.

Laying out of Grounds.—We receive numerous requests from those who wish us to lay out their grounds; they send us a sketch of the place as it is, and ask us to draw a plan for improving it, and one even goes so far as to ask that we mark the place for every tree and shrub, and moreover to tell where they are to be obtained. A plan for a place should not be made without seeing its surroundings, unless it be a town yard or village lot, as each place should be planned with reference to its near and distant views. Those who make such requests can have little idea of the time required, or the amount of thought that must be given to comply with them. We must, of necessity, decline all such requests. Let those who wish to lay out new or improve old grounds, and do not wish to employ some one to do it, procure some work upon the subject, and adapt the principles to the case in hand.

Front Yards in a Town or Village.—Do not attempt to reproduce a plan made for several acres, but make the best of the small area. Where all is formal, the grounds must also be so, and picturesque planting out of the question. Often a single bed of ornamental plants, or a handsome specimen plant, surrounded by grass, with a few shrubs along the boundaries, and vines at the house, are all that can be had. With only these simple materials the yard, if well kept, will be more attractive than one filled with a promiscuous lot of flowering plants.

Larger Places, where there is half an acre or more between the house and the street, afford more opportunity for tasteful arrangement. The two important points are the lawn and the approaches, whether drives or walks, and they should be so planned with reference to one another, as to secure the greatest unbroken expanse of grass, and the most convenient approach to the house.

The Lawn is the chief element of beauty in all places, whether large or small; if cut up by needless paths or by too many flower beds, its effect is frittered away, and it looks like a mere appendage to the paths and beds, rather than the ground work in which these are made. The lawn is expected to last many years, and the work must be thorough. The ground should be drained if need-be, leveled, or graded, and prepared better than for any field crop; then sow Red-top, Kentucky Blue-grass, or, in light soils, Rhode Island Bent, with a pint of White Clover to the bushel, if desired, using from three bushels to the acre, on rich land, to five bushels on poorer soil. In small yards it is better to lay sods, if a good turf can be had; and in large lawns lay a margin of turf along the walks and roads, and around any beds made in the lawn.

Walks and Roads.—These are matters of necessity, and not of ornament; nothing is more distressing than to see all sorts of "serpentine" walks leading no-where. A curved line is more pleasing than a straight one, and in large places the walks and roads often properly have such a form, but it is absurd to make a crooked path on a small place because some one else has one. Each place must be treated according to the relation of the house to the road; to secure an unbroken lawn, the walk and drive may both be at one side of the front; it is often advisable to have two entrances, the road curving from one up to the house, and leaving it at a similar curve to reach the other gate. Or the road may form a turn in front of the house, and one entrance answer. The location of the road requires careful consideration, as does that of the walks; never make such a walk as will induce visitors to take a "short cut" across the lawn, to reach the house. A good foundation of broken stone is essential to permanent and dry roads and paths.

Trees.—Two common mistakes are made; selecting trees that will grow too large, and planting too thickly. Young trees make little show, and the place looks naked. Imagine how it will look twenty years hence, and set trees accordingly; for an immediate effect do not fill in with large-growing trees, and expect to cut the surplus out, for you won't do it, but use shrubs. Do not set trees too near the house; light and air are not to be shut out. Use both evergreens and deciduous trees, and do not plant certain sorts because every one else does. The Purple and Weeping Beech; the Cut-leaved Birch; the Yellow-wood, or Virgilia (*Cladrastis*); the Red-bud, or Judas-tree (*Cercis*); the Kolreuteria; the Chinese Weeping Cypress (*Glyptostrobus*); the Deciduous Cypress (*Taxodium*); the Sweet-gum (*Liquidambar*); the Tulip-tree; several native and Chinese Magnolias; the Oak-leaved Mountain Ash; the Gingko; are only a few among the readily obtained deciduous trees that might be planted more frequently than they are, and avoid the monotony now so common.

Shrubs.—An abundance of these is desirable; they may be judiciously planted to conceal the boundaries, may be set in clumps, and singly. Former volumes describe many desirable native shrubs, and the catalogues describe the exotics.

Flowers.—There are four distinct garden classes of flowers, each of which has its uses. 1. The hardy herbaceous perennials, which bloom in the same place for several years, such as the columbines, some spiræas, phloxes, chrysanthemums, etc. 2. Annuals: those which are raised from the seed each year: balsams, Drummond's phloxes, petunias, asters, and a host of others. 3. Bedding plants, which are tender exotics, raised from cuttings, of which a new supply must be purchased, or raised in a greenhouse, each year; such as verbenas, geraniums, heliotropes, etc. 4. Bulbs, of which there are the hardy, planted in autumn, to flower early in spring, like hyacinths and tulips; and the tender, which are set out in spring, to be taken up in the fall, such as gladiolus, tiger-flowers, tuberoses, etc.; the cannas are treated the same, though they are tubers, rather than bulbs. To produce striking effects, plants of either of these classes are set out in masses, in separate beds all of one color, or a few contrasting kinds in the same bed, arranged in circles or other well defined patterns. In many cases, instead of flowers, brilliant beds may be made with what are called

"*Foliage Plants*," *i. e.*, those with bright leaves; prominent among them are the Coleus (see p. 141.), centaurea, achyranthes, etc. These are propagated under glass from cuttings. They have the advantage over flowering plants of growing in places too much shaded for those to bloom freely.

Cut Flowers.—Where plants are grown in masses, flowers can not usually be cut without injury to the effect. There should be a reserve bed where Candy-tuft, Mignonette, Sweet Alyssum, heliotropes, pinks and other favorites are grown in abundance, and may be cut freely.

Climbers are useful for shade and ornament, and some may be planted in the smallest grounds. Wistaria, Trumpet and Virginia Creepers, Honeysuckle and Akebia are favorite woody climbers; among the annuals are sweet-peas, nasturtiums, hyacinth-bean, the various morning glories, and several of the gourd-family, including the Wild Balsam Apple, described on page 140. The fragrant Madeira Vine grows from a tuber.

Greenhouse and Window Garden.

As the season advances plants will grow rapidly and will need more water....Give air whenever the outside temperature will allow....Plants to go into the open ground need to be hardened off before setting out; the more hardy may be put in a frame, where they can be covered with sashes at night.... Insects will also increase rapidly, and care must not be relaxed....The propagation of bedding plants should be kept up, and seeds of tender annuals be sown in the house.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending March 13th, 1876, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	293,000	729,000	1,471,000	33,000	151,000	1,016,000
28 d's *last* m'th	211,000	1,007,000	1,309,000	13,500	425,000	411,000
Sales.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	346,000	1,911,000	1,617,000	33,000	336,000	841,000
28 d's *last* m'th	287,000	1,694,000	2,226,000	28,000	296,000	714,000

2. *Comparison with same period at this time last year.*

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1876	293,000	729,000	1,471,000	33,000	151,000	1,016,000
23 days 1875	264,000	673,000	2,327,000	4,300	205,000	623,000
Sales.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1876	346,000	1,911,000	1,617,000	33,000	336,000	841,000
23 days 1875	331,000	2,321,000	2,763,000	28,000	297,000	989,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Mar. 6, 1876	4,473,653	302,026	82,562	441,078	757,457	377,278
Jan. 10, 1876	5,802,293	663,982	100,741	325,191	1,080,300	307,438
Dec. 7, 1875	5,878,036	816,962	99,908	305,961	1,252,005	258,364
Oct. 11, 1875	2,382,502	1,682,246	10,910	21,688	439,698	261,428
May 11, 1875	969,804	1,542,924	16,124	16,537	545,209	229,655
Mar. 8, 1875	2,665,775	2,274,614	45,756	234,071	854,601	154,978
Jan. 11, 1875	3,675,122	1,019,900	50,889	191,470	877,014	145,647
Nov. 9, 1874	3,680,141	1,727,510	19,123	117,185	794,722	135,882

4. *Exports from New York. Jan. 1, to March 9.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1876	357,773	2,970,068	2,630,905	15,387	—	46,266	198,153
1875	336,828	2,492,999	2,766,568	3,168	90	22,264	102,595
1874	451,520	5,833,405	2,026,686	190,985	—	—	21,993
1873	325,386	868,737	2,778,029	1,004	6,700	—	4,977
1872	165,416	1,604,991	2,974,419	135,787	—	—	5,717

Gold has been up to 115, and down to 112⅞, closing March 11 at 114⅝, as against 112⅞ on Feb. 12, and 112⅞ on Jan. 13... The Breadstuff movement, through the past month, has been fairly active, but generally at lower prices. The export demand has been good, especially toward the close, at the ruling figures, favored by the later and more encouraging market advices from Europe. The business for shipment has been largely in Flour, Spring Wheat, and mixed Western Corn. Some export purchases of Rye, Peas, and even Oats have also been reported. A shipment of some 40,000 bushels Oats was recently made by steam to Liverpool. This was mostly of through freight. The dealings in Canada Wheat, and in Canada Peas, in the wholesale line, have been exclusively for export. Toward the close, the better grades of Wheat were held more confidently. Considerable part of the Spring Wheat now here is represented as sprouted, owing, partly, to the very mild, open weather. On Friday, March 10, sales of Sprouted No. 1 Spring (Minnesota) were made in this market as low as $1.28@ $1.29, in store and afloat, while bids of $1.35, in store, were refused for prime. New York grades of grain now form the basis of a large proportion of the dealings, notably so in the instances of Corn....The Provision trade has been quite active, and at the close, the market has been quoted firmer for Pork. Lard, Bacon, Beef, Butter, and Cheese. Eggs, unsettled and close weak in price, under large supplies, and an unusually moderate inquiry, for the season....Cotton has been quoted lower, with a fair movement reported....Hops, and Clover Seed,

higher and in good demand....Tobacco quiet, and quoted cheaper... Wool has been in very moderate request, and with more urgency on the part of sellers to realize, prices have favored buyers, decidedly so in the instance of Western Texas, and California Fall, which grades have been offered most freely... Hay has been fairly active at firm prices. The purchases for shipment to coastwise ports, and to Havana, have been liberal. Straw has been inactive at former rates.

CURRENT WHOLESALE PRICES.

	Feb. 14.	Mar. 13.
	127 1-8	114 5-8
PRICE OF GOLD		
FLOUR—Super to Extra State	$4 25 @ 5 85	$4 00 @ 5 65
Super to Extra Southern	4 25 @ 8 75	4 00 @ 8 50
Extra Western	4 90 @ 9 75	4 80 @ 9 50
Extra Genesee	5 75 @ 7 00	5 65 @ 7 00
Superfine Western	4 25 @ 4 75	4 00 @ 4 50
RYE FLOUR	4 10 @ 5 05	4 00 @ 5 10
CORN-MEAL	2 75 @ 3 50	2 55 @ 3 45
BUCKWHEAT FLOUR, ₩ 100 lbs	1 75 @ 2 25	1 75 @ 2 25
WHEAT—All kinds of White	1 35 @ 1 55	1 35 @ 1 55
All kinds of Red and Amber	90 @ 1 47½	1 00 @ 1 47
CORN—Yellow	62½@ 70	58 @ 65
Mixed	59½@ 72	61½@ 68
White	60 @ 72	61 @ 69
OATS—Western	44 @ 52½	43 @ 52½
State	45 @ 52½	43½@ 52½
RYE	86 @ 92	78 @ 87½
BARLEY	70 @ 1 30	70 @ 1 25
BUCKWHEAT, ₩ bush	58 @ 60	60 @ 62
HAY—Bale, ₩ 100 lbs	70 @ 1 10	75 @ 1 10
STRAW, ₩ 100 lbs	60 @ 1 15	65 @ 1 15
COTTON—Middlings, ₩ lb	13 @ 13¼	12¾@ 12⅞
HOPS—Crop of 1875, ₩ lb	13 @ 20	13 @ 20
FEATHERS—Live Geese, ₩ lb	32½@ 60	32½@ 60
SEED—Clover, ₩ lb	13½@ 14⅛	14 @ 15
Timothy, ₩ bushel	2 45 @ 2 85	2 45 @ 2 75
Flax, ₩ bushel	— @ 1 65	1 65 @ —
SUGAR—Refi'g & Grocery ₩ lb	6½@ 9⅛	6½@ 9
MOLASSES, Cuba, ₩ gal	22 @ 37	20 @ 35
New Orleans, new crop, ₩ gal	45 @ 63	45 @ 60
COFFEE—Rio (Gold)	15 @ 18	15 @ 18
TOBACCO, Kentucky, &c., ₩ lb	6 @ 25	5 @ 24
Seed Leaf, ₩ lb	6 @ 25	5½@ 25
WOOL—Domestic Fleece, ₩ lb	27 @ 58	27 @ 56
Domestic, pulled, ₩ lb	25 @ 48	23 @ 47½
California, clip	13 @ 32	12 @ 30
TALLOW, ₩ lb	8⅝@ 9¼	8⅝@ 9½
OIL-CAKE—₩ ton	— — @43 00	36 50 @40 00
PORK—Mess, ₩ barrel	— — @22 50	22 75 @23 00
Prime Mess, ₩ barrel	20 75 @22 00	20 50 @21 50
BEEF—Plain mess	10 50 @12 00	10 50 @12 50
LARD, in trcs. & bbls, ₩ 100 lb	12 37½@ 13 25	13 65 @13 67½
BUTTER—State, ₩ lb	22 @ 38	22 @ 40
Western, poor to fancy, ₩ lb	14 @ 33	16 @ 35
CHEESE	5 @ 14	5 @ 11¼
BEANS—₩ bushel	50 @ 1 85	50 @ 1 70
PEAS—Canada, free, ₩ bu	1 15 @ 1 20	1 15 @ 1 18
EGGS—Fresh, ₩ dozen	15 @ 20	14½@ 18
POULTRY—Fowls	10 @ 19	12 @ 20
Capons, ₩ lb	— @ —	22 @ 28
Turkeys—₩ lb	12 @ 19	13 @ 17
Geese, ₩ pair	1 50 @ 2 50	1 25 @ 2 75
Geese, ₩ lb	10 @ 14	7 @ 12
Ducks, ₩ pair	60 @ 1 25	65 @ 1 25
Ducks, ₩ lb	10 @ 20	17 @ 22
Roosters, ₩ lb	6 @ 9	8 @ 10
DUCKS, Wild, ₩ pair	40 @ 2 75	40 @ 1 75
HARES, ₩ pair	20 @ 35	— @ —
RABBITS, ₩ pair	25 @ 40	30 @ 40
PIGEONS, wild, ₩ dozen	— @ —	2 00 @ 2 50
LETTUCE, hot-house, ₩ doz	— @ —	50 @ 75
CUCUMBERS, hot-house, ₩ doz	— @ —	1 50 @ 3 75
TURNIPS ₩ bbl	75 @ 1 00	75 @ 1 00
CARROTS, ₩ bbl	1 00 @ 1 25	90 @ 1 25
BEETS, ₩ bbl	1 00 @ 1 25	75 @ 1 25
CABBAGES—₩ 100	3 00 @ 6 00	3 00 @ 7 00
ONIONS—₩ bbl	1 00 @ 3 00	1 25 @ 3 00
POTATOES—₩ bbl	75 @ 1 75	75 @ 1 75
New Bermuda, ₩ bbl	— @ —	7 00 @ 9 00
SWEET POTATOES—₩ bbl	1 50 @ 3 25	2 25 @ 3 75
BROOM-CORN	3 @ 11	3 @ 11
GREEN PEAS, Florida, ₩ cte.	— @ —	4 25 @ 5 00
TOMATOES, Bermuda, ₩ cte.	— @ —	3 00 @ —
PEARS, per box	4 00 @ 4 50	— @ —
GRAPES, ₩ lb	3 @ 9	5 @ 8
APPLES—₩ barrel	1 50 @ 3 25	1 75 @ 3 75
CRANBERRIES—₩ bbl	8 50 @12 50	10 00 @14 00
SQUASH, ₩ bbl	75 @ 1 25	— @ —
ORANGES, Florida, ₩ bbl	6 50 @12 00	7 00 @13 00

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Total.*
Feb. 21	9,406	74	646	15,459	22,611	48,196
Feb. 28	8,583	114	797	26,129	27,555	63,178
Mar. 6	7,179	55	868	18,399	25,168	51,669
Mar. 13	7,496	83	879	20,416	19,608	48,482
Total for 4 Weeks	32,664	326	3,190	80,403	94,942	211,525
do. *for prev. 5 Weeks*	41,267	524	4,236	131,310	126,684	304,021

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	8,166	31	797	20,100	23,733
do. do. *last Month*	8,253	105	859	26,262	25,337
do. do. *prev's Month*	6,871	67	797	19,085	21,498

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Feb. 21	8½@13 c.	9½@11 c.	10½c.
Feb. 28	8½@13 c.	9½@10c½.	10 c.
Mar. 6	9 @13 c.	9⅝@11 c.	10½c.
Mar. 13	8½@13 c.	9½@10¾c.	10 c.

Beeves.—The market for the past month has been slow, and prices have fallen, except for fat stock. 300 carcasses of fat beeves have been shipped to England during the month, and this has helped to keep up the price of the best stock, of which alone the shipments consist. Half fed and poor stock has been in excess, and has given way ½c. ₩ lb. As we close, extra cattle sold for 12 @ 13c. ₩ lb., to dress 58 lbs.; good native steers at 9½ @ 10¾c., for 56 to 57 lbs., and poorer stock estimated at 55 lbs., at 8¾, with some fat bulls at 4¾c. ₩ lb., live weight....**Cows.**—Milk cows have been dull of sale all through the month, closing prices are from $50 to $80; but it needs to be a very good cow to bring the outside price....**Calves.**—This class of stock suffers from the abundance of small untimely calves, some of which weigh less than 100 lbs. alive, and are hard to sell. Poor calves sell at 6 @ 8c. ₩ lb., and fair to good, at 9 @ 10c., live weight. Prime hog dressed bring 12½ @ 13c. ₩ lb. ....**Sheep** have been in good demand, and excellent in quality, and prices have advancad fully ¾c. ₩ lb. 8¾c. ₩ lb. was paid for 112 head of Ohio sheep, averaging 145 lbs., and 8⅝ for a lot weighing 126 lbs. Medium Sheep sell for 6½ @ 7c. ₩ lb., and thin at 5¾ @ 6¼. The first lamb of the season came from Kentucky, and brought $7 for 40 lbs. Jersey lambs are expected soon, and $9 is to be the price of them....**Swine.**—Hogs are scarce, and prices touched 11c. for dressed, the market closes easier at 10⅝ @ 10⅞ for city dressed, and 10⅛ @ 10¼ for western. The arrivals in January and February, 1876, were 213,263, against 235,154 for same time last year.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	22.00@ 24.00
Ground Feed, per ton	22.00@ 24.00
Linseed-oil-cake, western, per ton	45.00@ 46.00
Cotton-seed-cake, per ton	35.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1, Peruv. Guano (10 p. ct. ammonia), ₩ ton	$54.00@$55.50
" " (Rectified), per ton	61.50
Mapes' Superphosphate (mineral), per ton	30.00@ 35.00
" Bone Superphosphate, per ton	40.00@ 45.00
" Prepared Fish Guano, per ton	35.00@ 40.00
Fish Guano (crude in barrels), per ton	24.00
Bone Black, per ton	25.00@ 28.00
Bone Flour, per ton	40.00@ 45.00
Rawbones Ground (pure), per ton	33.00@ 40.00
Rough Bones, per ton	22.00@ 25.00
German Potash Salts, (25@35 per cent), per ton	20.00@ 25.00
Gypsum, Nova Scotia, ground, per ton	8.00@ 9.00
" In barrels, per bbl	1.25
Wood Ashes, per bushel	16 c.@18 c.
Nitrate of Potash (95 per cent.), per lb	8½c.@ 9 c.
Chloride of Potassium, (muriate of potash), lb	3½c.
Nitrate of Soda, per lb	3¾c.@ 4½c.
Sulphate of Ammonia (25 per cent.), per lb	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia	$3.00 @ $4.00

Good Things
For Everybody.

Every reader of this paper, who desires to do so, can obtain a sufficient number of subscribers to secure one or more of the valuable Premiums, which are offered in our Premium List, and which range in value from 75 cents to $650.00. Among the articles offered, are: **Gold Pens and Pencils—Watches—Fine Table Cutlery—Elegant Silver-plated Articles—Scissors in Cases—Pocket Knives—Boy's Wagons—Children's Carriages—Floral Sets—Microscopes—Melodeons—Pianos—Guns—Rifles—Books, etc. etc.** Look over the List, if you have received one, and if not, send for our **Illustrated Premium List,** and see how much you can get by a little effort and without loss of valuable time.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Coloma Bonds, Ill.—Holders of these should not be worried or badgered into sacrificing them, but send their address to the Editor of this journal.

Hon. Senators, Don't!—We sincerely hope there will be found wisdom enough in our National Senate to defeat the monstrous fraud of printing 300,000 (or any other number) of the so-called "Reports of the Agricultural Department." They must know by this time, that with so weak a head as that Department has, such a volume cannot fail to contain a large amount of bosh, besides misleading matter enough to far more than counterbalance the occasional item of sound information it may contain. Pray, don't print and scatter such a volume at the people's expense. ..An investigation committee, if not of the House, then of some of the people, will next be in order to ascertain through what (indirect) channels the Express Companies influence the proposed Postage law—what wives and fourteenth cousins hold stock in certain companies. The trap sprung upon the country, last year, swindled too many persons who had made and issued their business and other prospectuses, when the new law for the benefit of Express Companies was suddenly sprung upon them. They have quietly waited, under the plea that it was an oversight, but they have good reason to think otherwise now—and if justice be not done, they will not remain either quiet or inactive.

A Grand Free "EXPOSITION," is now open to our Readers—That may be "putting it rather strong;" but let any one just begin on page 149, and read on carefully back through all the remaining pages, and then take the 2nd cover page. He will be surprised at the amount of information given, and the number of articles offered in different parts of the country—quite likely some of them just what the reader is wanting at this time. Seeds and plants are sent right to the doors of the dweller in the remotest section of the country as cheaply as to the nearest. One can hardly look through these business pages without getting some new business thoughts ...Much care is used to reject unreliable men and things from our advertising pages. No deceptive or disgusting medical nostrums will meet the reader's eye.—As a whole, we doubt if ever there were gathered in one paper a larger number of trustworthy men, than will be found in our "Exposition," or advertising pages. A condition of the admission of advertisers into our pages is that our readers shall be treated fairly and squarely, and we repeat the request that in corresponding with, or ordering from them, or sending for their circulars, catalogues, etc., our readers will let them know that their acquaintance was made through this journal. It will do no harm, and may do both parties good.

Don't Stop Yet.—If you have commenced getting up a club of subscribers for the *American Agriculturist,* with a view to securing one of the good Premiums, and have not yet gathered quite as many as needed to get the particular Premium article you want, don't stop yet, for the offers, according to our List, will be continued right on until July 1st. You can secure many subscribers in this and the two following months. Try.

Keeping Boys on the Farm.—Mr. Waring's suggestions on this topic (page 128), will attract attention. By a coincidence, "Among the Farmers," page 134, incidentally illustrates the same idea in referring to a New England village of farmers.

Essex Pigs.—"H. G. E.," Henderson, N. C. Some Essex pigs are rather light haired, and of a bluish or slate-colored tinge, as though they had a cross of Neapolitan blood. We would rather see them with a good, silky, black coat, but they cannot always be procured of this kind. Having been improved by crossing, there is still some variety in the different strains of this breed.

Wanted, JUST NOW. — Everybody knows the satisfaction of having exactly the right thing at hand at exactly the right time. **A MILLION PEOPLE, at least,** in the country and in villages, are **just now** planning out Spring work in their fields and gardens. What a help it would be to them to have the information, the hints, and suggestions, which the current numbers of this journal give, and will give all Summer. Single hints save or bring back many dollars. Just now, in this month of **April,** please explain this matter to some of your neighbors, get and forward their names, and in return the Publishers will make you a present *worth having.* See what they offer in the **Illustrated Premium List.** If you have not one at hand, send word by postal card, and the Publishers will forward you one free.

Hay Carriers.—"V. W. K.," Shirland, Ill. It is not practicable to stretch a rope so tightly that the pulley of a hay carrier can travel upon it. One which traveled upon an iron rod stretched along the barn, was exhibited at the New York State Fair, and worked well. The iron rod did not sag as the rope inevitably would.

To Young Horticulturists. — The correspondent at "The Pines" says, "I have usually had one or two young men glad to work for the instruction they receive. They have a chance to learn much, if they desire to. I don't wish any one who has not a real taste for such matters, and fond of both work and study." Address, giving age and particulars, "The Pines," at this office.

Bad Fertilizers will find little sale in Connecticut now. The small appropriation of less than $3,000 by the state, for an Agricultural Experiment Station, will this first year save the farmers of that state tens of thousands of dollars expended in poor fertilizers, and other tens of thousands in loss of time and culture. The Station has discovered that considerable quantities of fertilizers sold last year at $55 a ton, were not worth $9 a ton. The working of the Station and other useful information will be found under "Science Applied to Agriculture, pages 129 and 130.

$115.90 for $3.10.—On page 140, under "Gardening on a Town (or village) Lot," will be found not only some useful hints, but also another of the multitude of illustrations that continually come to us, showing the profit derived from the small sum invested in a journal like this. The gentleman referred to, at a cost of $1.60 for the *American Agriculturist*, and $1.50 for a book, got at a very low estimate, **$115.90** worth of vegetables, etc. The extra amount and fresh quality of the articles, doubtless paid the cost of seed. It would be difficult to estimate in dollars and cents, the benefit to health, and the prolongation of life even, that resulted from the healthful exercise his work afforded. Pity there are not tens of thousands of others deriving the same benefit, in addition to the multitude of our present readers.

Amenities of the Farmers' Club.—The remarkable New York Farmers' Club is not only a school of remarkable agriculture, but its courtesies are of a remarkable kind. A communication was read from a gentleman living at a distance, whereupon one of the individuals of the Club said that one of its statements was "*sacerdotal nonsense.*" Probably the one who uttered it did not know the meaning of "sacerdotal," but then it sounds lovely.

The Shepherd's Manual.—By Henry Stewart, New York, Orange Judd Company, pp. 252, 12mo. The lack of a work on sheep in general, has long been felt, and while we have excellent treatises upon the Merinos, there has been none in which the other, and increasingly popular breeds, as they are in this country, are described, and their proper management taught in any detail; we believe that this want in our agricultural literature has been adequately met by the work bearing the above title. That we may not be thought to give a partial notice of a book by one of our own editorial associates, we content ourselves with merely enumerating some of the important topics. It gives full descriptions of all the prominent breeds, their adaptability to different localities, and the success that has attended those which have been fairly tried in this country. The summer and winter management, in large and small flocks, is given in full, not only with reference to sheep-raising as an exclusive business, but where it forms part of a mixed husbandry; as the raising of early lambs is often an important source of profit, especial attention is given to this. The anatomy of the sheep is clearly given, including a full account of the structure and peculiarities of wool. Shearing, and all the mechanical operations connected with wool, are described. The many diseases to which sheep are subject, are shown to be almost entirely due to neglect and mismanagement, and while the methods by which they may be avoided are given special prominence, the proper treatment when the animals are attacked, is pointed out. The book is illustrated in the most liberal manner, not only by portraits of sheep of different breeds, and engravings of their anatomy, but numerous barns, sheds, hurdles, and every appliance and operation in which an engraving would be of aid, is illustrated. The work is not local in its character, and we have no doubt it will meet with acceptance from shepherds and farmers throughout the whole country. Now ready. Sent by mail, post-paid, for $1.50.

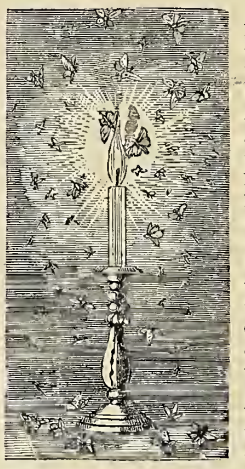
About Some Articles.—The interesting chapter on "Cow Peas," page 139, with other like articles, illustrate how much labor and investigation are often required to provide the material making up the pages of this journal. Those two columns cost a series of investigations extending through months. Few readers have any conception of the work and thought expended not merely upon the editorials used in these pages, but in examining and weeding out many times as much more that is finally rejected. It costs some $2,000 to thus prepare and illustrate each number, the benefit of which is enjoyed by every reader. We mean always to get the *best* material, at whatever cost.—May we not point with satisfaction to the great and useful variety supplied by the first four numbers of this Centennial volume? The future numbers will not fall behind.... Ought not thousands of others, not now readers, to be enjoying and profiting by these pages? ☞ Will not each of our present readers take pleasure in inviting at least one or more new readers to join us? From electrotype plates we can supply any or all previous numbers of the volume. Rewards in the form of premiums are offered to those who send three or four names. The Boys and Girls have a fine special premium offered them on the third cover page. PUBLISHERS.

A New Small Fruit Manual.—Mr. E. P. Roe, of Cornwall on the Hudson, whose early success in general gardening is recounted in that interesting work, "Play and Profit in my Garden," has of late especially devoted himself to the cultivation of small fruit, and some of his achievements in that line have been noticed in our columns. He has gone into his work not only with great enthusiasm, but with unusual intelligence, and has been remarkably successful. The methods of culture that have led to this success, and his experience with the leading varieties, are now presented in a handy pamphlet of over 80 large pages, in which instructive facts are told in a chatty manner, which makes them pleasant reading. The chapter on "Picking and Marketing," is eminently practical and sensible. Sent, post paid, by the Orange Judd Company, for 50 cents.

The Sterling Strawberry.—With new small fruits we always advise caution. Strawberries, especially, are so affected by soil and cultivation, that a perfectly truthful account of their success in one place may not be borne out by trial in another. We prefer to say but little about new varieties, unless we have tested them ourselves, or have the testimony of some disinterested horticulturist of large experience. In regard to the "Sterling" Strawberry our friend M. B. Bateham, as Secretary of the Ohio State Horticultural Society, was one of a committee to visit the grounds of its proprietor, Mr. George H. Lodge Cuyahoga Falls, Ohio, last June. Mr. B. writes us from his home, at Painesville, Ohio, that, with the exception of the display of Jucunda, which we both saw at the place of the lamented Mr. Knox, he has never seen such a show of large, brilliant berries. It was raised about six years ago by Matthew Crawford, of Cleveland, Ohio, who sold the stock to Mr. Lodge. Mr. B. thinks it is a seedling of the Jucunda, as it resembles that in form, size and color; is its equal in texture and flavor; and has a slight neck, which allows of ready hulling. The plant is described as strong, with abundant healthy foliage.

The Massachusetts Horticultural Society.—This grand old institution gives every indication of robust health and vigorous activity. The volume of Transactions for the second half of 1875 is a model of neatness and accuracy, thanks to its editor, Mr. Robt. Manning. The reports of the several committees are full and valuable. Various prize essays, with the discussions following their reading, are given. There are all the executive reports, including the Treasurer's, which, being by our friend Buswell, we are sure is right; still, when he talks about such sums as $272,000 in figuring up the accounts of a Horticultural Society, it is so far beyond our experience in such bodies, that we cannot follow him. The offer of premiums for the current year to be awarded at the weekly and great annual exhibitions, amounts to the liberal sum of $6,800. Schedules for these, as well as for prize essays, open to all, may be had on application. There is one thing about this Society to which we would call especial attention. Its cosey library rooms are open at all business hours, and horticulturists from all parts of the country are invited to call; they will be made welcome by Mr. Buswell, wife, or son, and if a stranger has business with any of the horticulturists of the vicinity, he can learn how to find him.

Sundry Humbugs.



Two of the prominent humbugs just now are Lotteries and Stock-gambling. We do not regard these as the most pernicious of all, as they do not so directly appeal to the young and ignorant, but are more likely to catch persons who, having some money, are on the look-out for a chance to increase their capital. Still they are bad enough, even where fairly conducted, and they are often made the cover for the meanest kind of fraud, as in the case of the Virginia Female Association, exposed in November last. We may say just here, that those who think that the names of governors mayors, judges, and all other "first citizens" are any guarantee, for the character of the schemes, should turn to our last volume, and see how useless these are. The "Female Humane Association" was endorsed by the very first names in Virginia, yet the local paper where the drawing took place, had to admit that "no greater swindle was ever perpetrated"—not that the Virginia gentlemen were dishonest; they, with the best motives, allowed their names to be used by a concern that appealed to them in the name of charity—which indeed, "covereth a multitude of sins"—without properly investigating the matter. So we say of all other lotteries and "distributions" (a favorite name just now), no matter *whose* name is appended, whether king or president, alderman or bishop, priest or deacon, you may be sure that they have loaned their names without due consideration, or that they are not the persons we had a right, from their positions, to suppose them to be, and are "on the make." We have often referred to the

KANSAS LOTTERIES,

but with regret, for Kansas has generally been regarded as a state that was settled by a class of people of exceptional intelligence and high moral worth; yet lottery schemes have been so numerous that one who did not know the facts might suppose it to be a community of gamblers. We last year referred to the "Topeka Library" lottery as one of these disgraceful schemes; a few days after our March number went to press, we received from the editor of the "*Kansas Farmer*," at Topeka, an article prepared for his issue of Feb. 23rd, which shows that at least one paper in Kansas, and we are happy to say an agricultural one, is not disposed to shut its eyes to the disgraceful games being played in that state. We cannot give space to the details, which show that it is a sham concern in its organization, and with no responsibility at the bottom of the "Association" holding the lottery; the article mentions the significant fact that while the drawing was advertised to come off on Feb. 29th, the contracts for advertising it were made for *six months!* There is no doubt of the position of the *Kansas Farmer* in this matter, and we gladly welcome it as a coadjutor in the fight against humbugs. It says: "We believe all lotteries upon general principles to be swindles. It is very much to be regretted that so noble an undertaking as the Topeka Library Association, should lend its name and character for so unworthy an object as a lottery. It is stated that after a portion of the directors had resigned, $2,000 was the price agreed to be paid for the virtue of the Library Association, for the use of its good name. It would be better for the youth of this community, and good reputation of the Association, as well as the city, if every book should be burned and the Association be wiped out of existence, than to become a party to a gambling, swindling concern, hidden behind some stolen bank name and legal subterfuges, that may permit them to laugh at the deluded fools who invest in their tickets."—There is another lottery at Atchison, in the same state, which we hope the "Farmer" will not overlook.

THE STOCK SPECULATORS,

now that the Post-Office authorities have shown that some of those formerly engaged in the "sawdust" or

counterfeit bank-note swindles are now, or pretend to be, "on the street," these "put and call" persons instead of advertising their trade openly, as formerly, have resorted to various new devices to get money into their hands. Some advertise for a person to "fill a position of trust" where the duties are light and the pay heavy, *but* the party must have a few hundreds of capital. The applicants who write to the address, learn that they are expected to act as local agents for a "Stock Broker," or a firm of them. This is the way the thing works: applicant sends his money to the "brokers," upon their assurance that he will have a profitable return. As one concern plainly writes to an applicant: "You can very readily see the necessity for us to make you a profit, or your services in our behalf would be no good."—Of course not, that is the bait; the way it is to be used in fishing for *flat-fish* is told in the same letter: "Your only duties would be to show these parties [referring to customers], the result of your own experience, and direct them to forward their funds to us."—Can anything he plainer than the fact that this "position of trust" is the noble one of playing stool-pigeon to a set of sharpers?

"COUNTERFEIT MONEY, OR QUEER"

has been very quiet of late. We supposed that this was a humbug of which we had seen every possible phase and development, but one A. Webb really gives us something new. We have the old story about his having been an engraver in the employ of the government, and all that, but he calls his money "counterfeit," and "my money" in distinction from "genuine money," but the novelty in this circular is the lofty moral attitude assumed by the sender. We read: "I wish to caution you against a lot of swindlers who infest the city; they make it their business to send letters all over the country, offering for sale counterfeit money at a very low price, and on the most liberal terms, and after obtaining money from those who are foolish enough to send any, they send all kinds of Rubbish in return in place of the goods. Of course these swindlers bring distrust upon reputable dealers (!) and all I ask is not to be held responsible for, or in any way identified with these swindlers of former years and present existance."—Isn't that sublime in its impudence! It is too bad for Webb to impair that lofty strain by miserably misspelling the last word, but one can't be perfect in everything.

A DANGEROUS "ILLUMINATING OIL."

He still lives—the man who used to go about the country selling a recipe for making an illuminating "oil" of alcohol, turpentine, camphor, etc. When they call it "sunlight oil," they put in some sliced raw potatoes. The chap has been around in Cuyahoga Co., Ohio, claiming that the "oil" was invented by some professor in the "Girard Medical College (!) Philadelphia, in 1875. Did not our friend make a mistake of a figure—wasn't it 1775? It probably can't celebrate its centennial with a grand blow up, but it has been around at least half a century. If this fellow is still operating in Ohio, and tells any others of our readers that it is used on ocean steamers—reply that you have no doubt that it is by the old "Flying Dutchman" who has fitted up his phantom ship as a steamer, and uses gunpowder under the boilers, and oils the machinery with nitro-glycerine. At all events, let his "oil" alone.

IN MEDICAL MATTERS

Not a single new thing has turned up, and this department of humbugology is getting to be very dull. Still we have evidence that the old ones are still alive....It seems funny at this late day to have a request to show up Clark Johnson, M.D., of Jersey City, when we long ago showed that there was no such person....In brief, about eye-cups and ear-drums, we can say emphatically *don't*. Let all such appliances severely alone until you have found out from a competent physician or surgeon *what is the matter* with your eyes or your ears; then if he advises them it will be safe to use them, *but not without*. Pay no attention to the certificates praising these or any other medical or surgical thing. Read about lotteries above and see what they amount to....We have a well written and well meaning letter from a friend who agrees with us in condemning secret or "patent" medicines as a general thing, but thinks we ought to except some, which are "handy to have in the house" and are much cheaper than the ordinary medicine. One of our objections to these medicines is the large price thus obtained for cheap stuff, and until we can present this matter more in full, we advise our correspondent and every one else to have nothing to do with any *secret stuff* whatever.

The Two Dollar Clock made by the Jerome Clock Co., is a very neat affair. We have had one running for about two months, in competition with a much larger and more expensive clock, and though we can't say that the little one has beaten, we are quite sure it has *kept even* with the other.

How to Clear Wood-land.—"J. M.," Bedford, Mass. Probably the best way to clear land of a small growth of trees, would be to cut the timber out by the roots; that is to cut the roots until the weight of the tree breaks what is left, and causes it to fall. Then the brush should be cut off and piled in close heaps, reserving all that is large enough for fire-wood, stakes, or fence-poles. The wood cut into cordwood, should pay all the cost of clearing. The roots being level with or below the surface of the ground, will not greatly interfere with its cultivation. When the cord-wood has been all hauled off, the brush heaps should be burned and the ashes spread. The first crop, which should be potatoes, may be planted in the spring. After two or three plowings the roots left in the soil will be torn up and out of the way. The future management will depend upon the kinds of crops that are most profitable in the locality.

Ho! Boys and Girls!—Every one of you must surely have the Great Centennial Toy, **"Ye Hero of '76,"** which is the finest Toy ever made; it delights old people too. The wide-awake Boys and Girls can have the first ones free (see third cover page of this paper). You will not only get "Ye Hero" yourselves, but everybody you get to subscribe will be benefitted. Why, last month's *American Agriculturist* was alone worth a whole year's subscription, to say nothing of all the other numbers of the year. Go right to work to-day, and be one of the ten thousand who want and get "Ye Hero" right away.

"An Egg Farm," is the title of a series of articles, by Mr. H. H. Stoddard, (now editor of The Poultry World, Hartford, Ct.), published in the *American Agriculturist*, in 1871-'72. This series at the time of its publication, attracted much attention, and ever since then there has been a regular demand for the numbers of the *American Agriculturist* containing them, showing that they have a permanent value. The publishers have reproduced these articles, with all their illustrations, which, with some additional matter upon poultry, make a neat volume, which is now in press, and will be sent post-paid, in paper covers for 50 cents, and in cloth for 75 cts. This is the first full account of an establishment, in this country, for the sole purpose of poultry raising and egg-producing. The story is told with much clearness, and in great detail, and imparts much useful information to those who keep a few or many fowls.

Prices of Produce are often inquired about by our readers. T. C. Davenport, (late of Tatem & Davenport), Produce Commission Merchant, 107 & 122 Dock St., Philadelphia, forwards to applicants produce quotations for that market.

Broom-Corn Culture.—There is no one among the special crops, upon which so little is given in agricultural works, as Broom Corn. In view of this we have gathered up the reliable information upon the subject of its culture, and have now in course of preparation, a hand-book, that will give full directions for growing and harvesting the crop, and also the methods of making brooms for home use and for sale; an account of the methods of culture at the great broom-corn center of Illinois, and other matter not before published. With illustrations. We hope to have this ready in time for the season for sowing.

Orr's Overalls, made by C. A. Baldwin & Co., New Haven, Ct., are capital things on the farm and in the garden. They are well made, and sent by mail so low, that it is cheaper to order than to make them.

The New Jersey Reports.—Prof. Geo. H. Cook, State Geologist, sends us his report for the year 1875, showing the progress of the Geological Survey. Rutgers College has the Agricultural Fund, and gives special instruction in sciences applied to agriculture and the mechanic arts. Prof. C. has the chair of agriculture, and has charge of the College Farm; the experiments made there with various fertilizers are of general interest. The same gentleman is also Secretary of the State Board of Agriculture, and sends a full report of the doings of that body. Altogether the state of New Jersey compares favorably with other states in the aid the commonwealth gives to agriculture.

Thorburn's "Early Paragon" Potato.—We planted this variety last year, but made no report upon this and the other potatoes sent us for trial, for the reason that they were, in the press of other work, planted too late, and a long drouth came on just as they started. As the trial was made under unfavorable conditions, it was no proper test of the varieties, and those who sent us samples, to whom we have not already written, will accept this as our reason for making no report. As to the "Paragon," we have before us a letter from Jonathan Talcott, of Rome, N. Y., a well known agriculturist, who last year made a trial of all the leading new potatoes. He says: "I consider the 'Early Paragon' one of the best sorts I have ever tried," and "were I now limited to two varieties, I should take the 'Snowflake' and the 'Paragon.'" Mr. T. regards it "as a first class potato in all respects, good yielder, fine, smooth potatoes, and extra good quality." This is excellent testimony from one who has tried every new variety offered during the past 15 years, and we hope that our trial this year will corroborate it.

Windmills for Cutting Feed.—"C. R. S.," Iowa City, Iowa. Any one of the different kinds of windmills advertised in the *American Agriculturist*, would probably suit for cutting feed. The best plan would be to write to all the parties for catalogues of their mills, and choose that which appears most suitable. The cheapest is not always the best. Simplicity and strength of construction, are the chief points to look to. There would be little difficulty in attaching an elevator or carrier to a fodder cutter. Any millwright should be able to devise such an attachment that could be removed when not needed. We know of none that is made, but see no mechanical difficulties in the way.

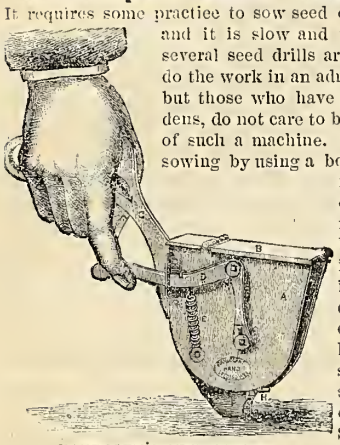
The New York Horticultural Association.

The exhibition of plants and cut flowers at the March meeting, was better than on the previous month. Geo. Such, of South Amboy, N. J., showed a number of magnificent orchid blooms, conspicuous among which were *Schomburgkia undulata*, and six varieties of *Lycaste Skinneri*: also flower spikes of six different palms, more curious and interesting than beautiful, nature seems to seldom multiply beauties in one individual; while few plants excel the palms in the graceful beauty of their foliage, the flowers are mostly devoid of color, and coarse in appearance. From S. B. Parsons & Sons, of Flushing, L. I., was a lilac-colored *Daphne Genkwa*, at a distance somewhat like a Persian Lilac, and a pure white Magnolia, named *Halliana*, both these shrubs being from Japan, will probably prove hardy in this latitude. From John Henderson, Flushing, L. I., Pink, "Lady Blanche," pure white, clove scented, and the new Violet, "Victoria Regina," a single variety, dark blue, of large size and exquisite fragrance, both fine new plants for winter flowers. From Peter Henderson, of Jersey City, N. J., six new varieties of Golden Coleus. From William Bennett, Flatbush, L. I., an immense bunch of variegated Chinese Azalea. W. C. Wilson, Astoria, presented the new orange-colored Tea Rose, "La Chamois," and a collection of rare Ferns in pots. From John White, Jersey City, N. J., a fine specimen of a new crimson winter-flowering Carnation. Mr. Roehrs, Florist, Jersey City, had a new Begonia, with flowers 2 inches across, of the most brilliant scarlet. This species, sent by Mr. Rozel from Peru, is yet unnamed, and is one of the most valuable new plants yet exhibited at the meetings. The Association decided to hold its first exhibition in June, not for prizes, but the plants to be voluntarily contributed by the members, and other well wishers of the Association. This course is unusual at horticultural exhibitions, which are usually made up of articles in competition for prizes offered, but the members feel confident that they can make their first exhibition one of which the Society will not be ashamed, without any drain on their treasury for prizes.

A School in the Woods.—To most farmer's boys the idea that any boy can injure himself by study, may be new, yet in the hot-bed life of cities we find boys, never at best very strong, who are actually ruining themselves for life, by too close application to study, and their brains are crammed and overworked, while their bodies are neglected, as if of very little consequence. Such a treatment results in long, lank, small-limbed and flat-chested boys, with colorless skins and flabby flesh. The anxious parents of such youths consult their doctor, who well knows that they need no medicine, but some attention to the development of their bodies, and rest for their brains. To meet the wants of these overworked boys as well as others who need it, our friend Doct. J. T. Rothrock, Wilkesbarre, Pa., will open on May 1st, a "School of Physical Culture" in a wild locality on "North Mountain," Pa. The boys will live in camp fashion, and have camp fare; they will have practice in all physical exercises, such as rowing, shooting, gymnastics, mountain climbing, and whatever will tend to develop their strength. At the same time they will be instructed in geology, botany, and other branches of natural history; taught to take and record meteorological observations; surveying, and other field studies. Physical culture will have the chief attention, and study be allowed only so far as it may be beneficial. Aside from the improvement in health that must result from four months of open-air life, a boy will learn to observe, and acquire much knowledge that can be learned in no other way, and which will hereafter be of great use. We know of no one so well fitted to be at the head of such a school as Dr. Rothrock. He is a skilled surgeon and

physician, an accomplished naturalist; being a traveler and explorer of wide experience, he is accustomed to the wilds, and moreover has the tact and ability to control others so needed in such a position.

Randolph's Hand Seed-Sower.—It requires some practice to sow seed evenly by hand, and it is slow and tiresome work; several seed drills are offered, which do the work in an admirable manner, but those who have only small gardens, do not care to be at the expense of such a machine. Some facilitate sowing by using a bottle, or by sowing from a horn or tin tube, and now we have a little machine, intended to do in a small garden, what the drills do in a large one. This sower, which we saw at the store of B. K. Bliss & Sons, 34 Barclay St., is represented in the engraving. There is a receptacle (*A*) for the seed, at the bottom of which is a piece (*F*) which opens the drill; there is an opening here, the size of which is varied by changing a plate (*H*). A line being set, the implement, held by the handle (*C*), is drawn along it, while the fore-finger, by moving a lever, (*D*), agitates the seed, and regulates the discharge. The implement is simple, and so far as can be judged without actual trial in the garden, will do its work well.

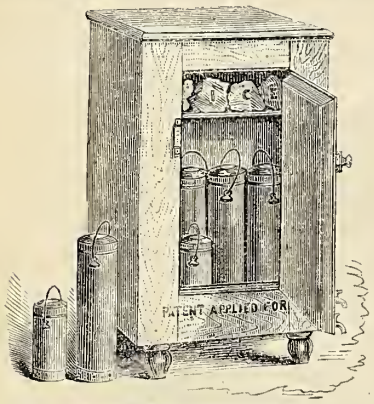


RANDOLPH'S SEED-SOWER.

Basket Items continued on page 153.

A Method of Cooling Milk.

The rapid cooling of milk and the setting of it in deep cans have been frequently described in these columns, and neither of them are new. There has recently been presented at the dairymens' conventions an apparatus based upon these principles, and this application of them being new, the device has been patented. The inventor, Mr. L. S. Hardin, of Louisville, Ky., claims that by this method milk can be kept at about one-half the cost that attends the use of shallow pans. Several comparative tests have been made with well known dairymen in Pennsylvania, New York, and Missouri, in which Mr. Hardin made excellent butter, in somewhat larger quantities than did his competitors by the ordinary process. At the annual meeting of the Dairymen's Convention, held at Rome, N. Y., the apparatus of Mr. Hardin was highly commended by the committee on dairy utensils. The apparatus consists of a refrigerating box which holds cans of a certain shape. For the milk of 10 cows the box is 24 inches wide, 32 inches long, and 40 inches high. The fresh milk is put into cans 8 inches across and 20 inches high, with tight fitting covers. The cans are immediately placed in the box, some ice is



HARDIN'S MILK-COOLER.

laid upon the shelf, and the door closed. The temperature rapidly falls below 50°. The milk is kept at as near 49° as possible for 36 hours, when the cream, about 4 inches deep, is taken off with a dipper. It is taken off while sweet, and can be churned immediately, or can be kept until soured. Mr. Hardin considers that sweet cream makes more and better butter than sour cream. The saving of space, and the perfect control over the temperature, are both very important points with dairymen, and both are secured by this method. It will be seen that the use of ice is necessary in warm weather.

Bee Notes for April.

BY L. C. ROOT, MOHAWK, N. Y.

In most locations, bees will be placed upon their summer stands during this month. It is desirable, (though not essential), that each hive occupy the stand it did last season. Where possible, set out those farthest from each other at the same time, as in the confusion of the first flight, they are more likely to mix, and in returning, to draw largely to one hive. Choose a still day, and at least as warm as 60°. Towards evening, after the bees become quiet, close all ventilation, except at the lower entrance, and that partially, if large. When movable frames are used, all combs should be removed, except those occupied by the bees. If hanging frames are used, a close fitting division board should be put in. Moderate feeding is desirable to stimulate breeding. If honey is abundant in the hive, the capping may be broken, when the bees will remove the honey to the center of the hive with desired effect. Rye-meal should be placed where the bees may have access to it from the very first, and continue the supply until it is refused; using dishes of a size corresponding to the number of colonies. For 125 swarms, I use two platforms, 4 feet square. The amount of meal taken by the bees will depend upon the supply of pollen.

Questions and Answers.

"What constitutes a desirable location for bees?".... This is an important question. In buying bees, I have often, with some accuracy, determined their condition before examination, from seeing the location they occupied. If in a high, bleak place, I judged they would be much poorer than when well sheltered from the wind. If natural protection is not afforded, a high, tight board fence should be constructed, or an evergreen hedge set out for this purpose.

"How do you Construct Glass Boxes?"

In describing the honey-box we shall take the size of box used on the Quinby hive, with two combs, and weighing 5 lbs. when filled. The top and bottom are made of pine ¼ inch thick, 6¼ in. long, by 4¾ in. wide. Three 1⅛-inch holes are made in the bottom piece. The posts at each corner are ⅝ in. square by 5 in. long. This constitutes the entire woodwork of the box. When nailed together, the outside of the posts should stand ⅛ in. in from the corner, so that when packed closely together, the glass will not be in danger of breakage. The glass is held in place by tins, (fig. 1), cut with a die, driven diagonally through the center of the post, and clinched. This work is done with a heavy machine in a most perfect and workmanlike manner. It will be seen that these tins will allow the glass to be taken from the sides of the box, and returned, even when the box is filled with honey—a fact of importance to the bee-keeper. Glass for the sides is 5 by 6 inches. If desired to use only top boxes, both end glasses may be alike, and cut 5 by 4⅝ inches. In practice it will be found that boxes to go at the sides and on top of the frames should be made exactly alike, as at times it becomes necessary to place those that are partly filled at the sides, on top to be finished, and vice versa, hence we make all boxes with both end and bottom entrance. For this purpose cut one end glass 5 by 2½ inches, fasten it at top and bottom with glue. This leaves a space of over ⅛ in. at each side of the glass which serves for entrance, when placed at the side of the combs, and when open ends are placed together on top, gives a passage from box to box. Guides of clean white comb, as shown in figure 2, are indispensable. Holes for nails should be made to avoid splitting....I am asked to describe the block used to set up the above described box.—To make this I use 1-in. basswood lumber. It is a box 5 in. high, and ¼ in. smaller each way inside, than the bottom and top of the honey box. Before nailing the bottom on the block, saw ⅝ in. from each inside corner, outwardly, on an exact miter. This is for the purpose of receiving the tins that are in the posts. Slight steel wire springs should be used to hold each post in position until nailed. On top of each of the 4 sides, nail a narrow thin strip, ⅛ in. from inside edge, to hold bottom of box in exact position over the posts, for nailing; this completes the block. Figure 3 shows the inside of one corner of such block. Now to put together the box, place a post in each corner of the block, lay the bottom in place, and nail each corner with inch finishing nails. If the springs for holding posts are properly arranged, the four posts may be drawn from the block with the bottom piece. To nail on the top, take a piece of inch board, 12 in. long, and 8 in. wide for a base. Near one corner, make a standard $5\frac{5}{16}$ in. high, of 2 pieces, 1 inch thick, one 4 and the other 2 inches wide. Nail them together at right angles as in fig. 4. At bottom of standard cut a slot ⅛ in. deep to receive the bottom of the box. On top, ⅛ in. from the inside edge, nail thin strips, same as on top of the block. In the center of the corner of the standard bore an inch hole to receive the tin on the post. Lay the box as taken from the block against this standard, place the top on it, and nail each corner alternately. At this point it will be found that the top does not rest snugly against the ends of the posts. It is left $\frac{1}{16}$ in. away to allow the glass to be more readily put in place. This should now be done, and fastened with the tins bent each way. Put in the guide combs before putting in the glass. After the glass is in, except the narrow end piece, place the box on a smooth metal surface, and drive the nails snug. Now put in the narrow end glass with glue, and the box is complete, (fig. 2). If the work is properly done in all its parts, this makes a neat, strong and desirable box.

Fig. 1.—TIN.

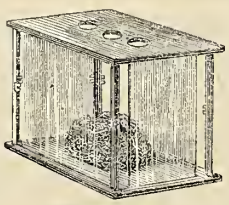


Fig. 2.—BOX.

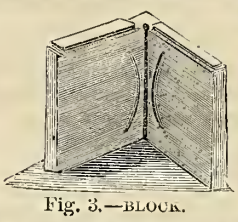


Fig. 3.—BLOCK.

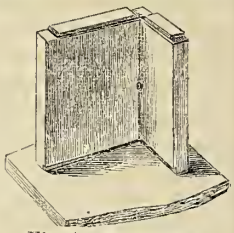


Fig. 4.—STANDARD.

Ogden Farm Papers.—No. 74.

BY GEORGE E. WARING, JR.,

How can we Keep the Boys on the Farm?

This question recurs periodically in all American agricultural writing, and it must come up almost constantly in the minds of thousands of farmers, who see their own, and their neighbors' children, deserting the occupation of their fathers, and seeking their fortunes and a pleasanter mode of living, in the towns. I am far from advocating for others, or even accepting for myself as a final solution, any new idea that occurs to me on this subject, but it has had a large share of my consideration for many years, and latterly there has grown in my mind a conviction, that one source of relief may be sought through the rather startling means of keeping everybody off of the farm. This idea has suggested itself from a somewhat careful examination of the life of the agricultural population of certain parts of Germany, where one rarely, if ever, sees a house or building of any kind outside of the villages, into which the farmers and their families, and their trades people, and mechanics, have congregated.

We have several instances of such living in this country, in towns along the Connecticut River—notably Deerfield, in Massachusetts, which is a beautiful village of farmer's houses and barns and cow-yards, with a broad lawn-like street, carrying from one end to the other, four rows of such elm trees as could hardly be matched elsewhere in the world. Local conditions suggested the origin and continuance of this mode of living; first, community for defence against the Indians; second, the fact that most of the fields these farmers cultivate, are at certain seasons covered by a broad lake, in which their village stands like an island.

No one would be mad enough to suggest such a radical reform as the abandoning of the houses and barns now in use, and the substitution of newly built villages. If this road is to be traveled at all, it must be by slow and easy stages. When farms are divided among sons, the old homestead may remain to one of them, and the others may assemble, with the new off-shoots of other families, at certain well selected centers, which will in time grow into comfortable communities, and take the place of the present scattered residences. That is, let all new houses be built in villages, and let the old ones die their natural death. Such community of living would, of course, not be suited to regions where

the farms are very large, but in the older settled parts of the country, where from forty to eighty acres is getting to be a profitable holding, from thirty to fifty families might live in such a community, and none of them be more than a mile from their farms. To have only the dwelling house in the village, leaving the barns and stables on the farms, would be in every way objectionable. It is an essential condition of successful farm life, that the "chores" be near at hand, and for this the stable, and tool house, and all appurtenances must be close to the dwelling. But a single acre, or even much less than this, will furnish all the accommodation required, together with a vegetable garden.

In the German villages the whole establishment is often, though by no means always, concentrated within the same four walls, covering less than two thousand square feet. Such crowding is disagreeable and undesirable, but if the space allotted to each family be as small as their comfort really demands, then the smaller the estates the better, as making a more concentrated community. Many of the French villages are simply long streets, with the houses standing very close together, but each with ample space at its rear.

The objection to this system, which must strike any farmer, is the important one that he will have too far to go to his daily work in the fields, but it is to be remembered that this affects him and his laborers, and operates only during the season for field work. In my own neighborhood it would be pretty constant from the first of May to the middle of October, and intermittent for a few weeks before and after these times. During the whole long winter it would only be necessary to make a trip as often as it was necessary to haul out manure, and to haul in barrack-stored or stacked hay or straw.

So far as the farmer's family is concerned, his wife and his daughters, and his younger boys, the relief would be absolute, and the saving would be considerable. There would be no need of the "best carriage" for church and visiting, and the serious amount of time and horse labor now demanded for these purposes and for shopping, would be entirely saved. The economical advantages and disadvantages of the system suggested, weigh differently in different cases, and it is my purpose here only to suggest an idea that seems to me worthy of much consideration. The influences of this life on the plans and aspirations of the younger members of the family, seem to be very obvious, and they are clearly demonstrated by the immemorial experience of countries where the custom has always prevailed. It is useless to tell a boy that the occupation of farming is the noblest of all, that it is the one that will the most surely secure him a comfortable support for himself and his family, and the one in which he will effect the greatest good to his country—and all that—boys do not take this view of their coming lives, and their ambition leads to other directions than nobleness of living, the securing of daily bread, and the doing of good to the public. They look for the enlightenment, sociability, intimate friendships, opportunity for displaying their modest merits of person, clothing, and attainments, which they believe (and rightly) to belong more particularly to men who live among their kind. Their aspirations grow first of all out of the oft stated fact that man is a social animal, and they so often waste their lives seeking even meagre employment in towns and cities, because of the imperative attractions that towns and cities hold out to them, for other reasons than mere business ones. They want friends, they want evening entertainment, they want to know plenty of nice girls, and they want many other things that an isolated life withholds them from.

I know that it is not usual in writing for American farmers, to suggest any deficiency in intelligence, but if I may be permitted to speak plainly what we all know and feel, that broadening of the natural intelligence, that comes only of frequent intercourse with many people, is, as a rule, impossible to a tired boy, who, after milking his cows and feeding his pigs, eats his supper and goes at once to bed, or who sits over a farm-house fire, repeating night after night the same sort of idle small talk with the same few boys and girls of his own neighborhood. American farm life is by no means altogether bad. It has very much to commend it to admiration, but it certainly does lack more than one element that is really necessary to a proper development of an intelligent boy. All who doubt this may, it seems to me, very readily satisfy themselves on the point by a simple consideration of the fact, that my text indicates, that as an almost universal rule, the sons of eastern farmers do not look forward to farm-life as one offering them the advantages that they most desire. The simple question of education alone is very vitally connected with the change here suggested. We are accustomed to regard our system of country common schools as something that marks our superiority over the rest of the world, but I have had sufficient intercourse with American farm children, and with the children of German farm villages, to be obliged to confess that the instructions that ours receive is in no way comparable with that. The village is more attractive to the teacher, and secures a more competent person, and that brightening of the wits that children get in communication with each other adds immensely to the efficiency of the system.

Let me insert as a saving clause that I am not the originator nor the champion of the plan herein set forth, I merely submit for the consideration of my readers a possible means for a much needed relief that has been forced on my own attention by the marked difference that I have observed between our own system and the European one, in its effect on native character, and especially in the degree to which it attaches the younger members of our profession to the work and life of their fathers. Some will suggest that the character of our German immigrants does not seem to sustain the theory, but as a rule our immigrants are not from the best class of German villages, and such as do come are not always rightly understood. Our ignorance of their language prevents our recognizing their real acquirements, while their civilization and education are based on a standard quite different from our own. The farmer in Germany does not aspire to be a gentleman. The American farmer does—always. Then, too, the local influences, the character of the evening entertainment, and the relations between the individual and the church and state, are all factors that must be considered in solving the problem. But if due allowance is made for the circumstances under which the development of each class has taken place, I believe that all must come to the conclusion that the interests of the individual, and above all, the very important question of a supply of farmers of the best class for the future feeding of the American people, would be greatly subserved by any change that would relieve the life of the farmer's family from its dullness and its isolation.

I have many letters from farmers in remote parts of the country asking at what price they can get young Jersey bulls and bull calves. I am obliged in many cases to say that while the cost of such animals is not beyond the means of any ordinary farmer, the cost and difficulty of transportation over such long distances is very great, and is often sufficient to make it impossible that the purchase should be made. I keep the records of the American Jersey Cattle Club, whose members are scattered over the whole country, in nearly every state, and while I cannot answer these specific questions by seeming to advertise breeders by publishing their names and addresses in these papers, I am always glad, on personal application, to give the address of some reliable breeder (whether a member of the club or not), sufficiently near to the applicant's locality.

In this connection a word of caution seems advisable. Some Jersey breeders under a notion, which I believe to be a mistaken one, are seeking to develop herds of animals of uniform color, and with black switches to their tails. Those who have sought this end here and abroad, have given at least a second place to the question of dairy production, so that either for this reason, or from the fact that the parti-colored animals are really the best representatives of the dairy branch of the race, I would advise any farmer seeking a bull for his own use, to be cautious in buying from a breeder who makes it a point that the animals offered is of the "fashionable color." Mr. Charles Sharpless, of Philadelphia, who has devoted much enthusiasm, and an abundant investment to securing a herd of the best Jerseys obtainable, recently imported an English bred Jersey cow of the conventional solid color. With a frankness and honesty equal to his enthusiasm and investment, he reports that at her best, about a month after calving, when on the best grass, and when receiving two quarts per day of ground oats in addition, she made but 11 lbs. 3 oz. of butter per week, and he says: "This comparatively small product is not favorable for the solid colored cow, and I have tried to recall any case of large yield of butter except from parti-colored cows."

A school-teacher in Massachusetts has bought a run-down farm, where he hopes to recover the fertility of the soil, and the robustness of his own health by a combination of agricultural and sanitary development. As a means to this end, his land not being natural grass land, he proposes to raise corn-fodder instead of hay for his stock, and asks what I have to say of the objection to this fodder raised by Dr. Loring and Mr. Harris Lewis. I answer that so far as I have been able to learn, the difference between good and bad corn fodder is, to a large degree, due to difference of soil, manure, and variety, but much more largely to a difference of sunlight and ventilation. *Sowed* corn-fodder is trash, no matter what the variety, nor what the quality or richness of the soil; but any variety planted thickly in *drills*, at least three feet apart, if grown on suitable land, is sure to make a large crop, and the free circulation of air among its leaves, and the full penetration of the light and heat of the sun, will be quite sure to give a quality generally equal to, and often, I believe, decidedly superior to that of good meadow hay. The sweet corns are richer in saccharine matter, and they make a better fodder than do the other sorts, but in my own practice I prefer the ordinary tall growing western corn, for the great difference in its yield. Give it plenty of sun, and it will give back plenty of nourishment.

Science Applied to Farming.—XVI.

By Prof. W. O. Atwater, Director of Connecticut Agricultural Experiment Station, Wesleyan University, *Middletown, Conn.*

Exhaustion and Enrichment of Soils—More about Commercial Fertilizers—What to Select, and How to Buy—Experience and Experiment—Inquiries Answered.

I very much regret that limited space forbids full replies to the many inquiries from correspondents, concerning soils and manures. I will, however, attempt a brief and general answer to some of the more important ones. First, then, what are we to understand by the

Exhaustion of Soils?

Crops take from the soil certain materials needful for their growth, and which are called, and rightly so, "plant-food." Some soils yield large crops, many years in succession, without manuring. They do this because they contain large stores of the ingredients of plant-food, as potash, lime, nitrogen, etc., and because these are furnished in available forms, so that the plant can readily use them. Most of the plant-food in our soils is, so to speak, *locked up* in rocks, sand, or partly decayed vegetable matter. In what is commonly called "weathering," these mineral and vegetable substances undergo certain chemical changes, which set free the lime, phosphoric acid, nitrogen, and other ingredients of plant-food, and change them to such forms that they may be dissolved in the water of the soil, and absorbed by the roots of the plants. There are some soils that have a very great *natural* strength. That is, they not only contain very large stores of plant-food, but by weathering, or otherwise, new portions are made available as rapidly as the older ones are removed in cropping. The famous "black-earth" soils of Southern Rus-

sia, are of this sort, and Mr. J. B., of Tennessee, who makes some inquiries about this subject, is perhaps familiar with some of the valleys, or "coves" as they are called in the eastern part of his own state, from which good crops of corn and wheat have been taken regularly for two generations, without any manuring. But these soils are exceptions. As a rule, after cropping for some time, the point is reached where the natural resupply of plant-food is insufficient to produce large crops. In the so-called "poor," "worn out," or "exhausted" soils, the natural strength is insufficient for profitable production.

What Materials are Lacking in Poor and "Worn-Out" Soils?

In order to know what fertilizing materials to use on such soils, we must know what ingredients of plant-food are deficient, and what manures will best supply them. For, as was illustrated in the previous article, (March No.), if any of the essential ingredients of plant-food be lacking, the crop will fail. An idea of the essential ingredients of plant-food removed from the soil in cropping, may be obtained from the table below, which I copy with slight alterations, from an article by Prof. S. W. Johnson, in the Report of the Connecticut Board of Agriculture, for 1872.

Table 26.

Materials removed from an Acre, by Various Crops.

	Sulphuric Acid.	Phosphoric Acid.	Lime.	Magnesia.	Potash.	Nitrogen.
Tobacco.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Leaves, 1,800 lbs., (1,260 lbs. dry)..	14	7½	73	17	71	49
Stalks, 1,100 lbs. dry	3	15	15	2	47	33
Total	17	22½	88	19	118	82
Rye.						
Grain, 32 bushels=1,800 lbs	1	15	1	3½	10	32
Straw, 3,800 lbs	3	7	12	5	29	9
Total	4	22	13	8½	39	41
Indian Corn.						
Grain, 75 bushels=4,200 lbs	1	23	1½	7½	14	67
Stalks and Leaves, 8,000 lbs	20	30½	40	21	133	38
Total	21	53½	41½	28½	147	105
Hay.						
2¾ Tons	2	23	43	18½	96	73
Potatoes.						
Tubers, 300 bushels	11	32	4	7	101	58

Large quantities of silica, and small quantities of soda, chlorine, and iron, are also taken from the soil by every crop. But in so far as these are *essential* ingredients of plant-food, they are supplied in abundance by every ordinary soil. We have therefore to consider only the *Potash*, *Lime*, *Magnesia*, *Sulphuric acid*, *Phosphoric acid*, and *Nitrogen*. Of this list, the magnesia, lime, and sulphuric acid, are commonly, though not always, supplied in sufficient quantities in even "worn-out" soils. The remaining substances, the *nitrogen*, *phosphoric acid*, and *potash*, are the ones most apt to be lacking in our soils, and it is in supplying these, that guanos, phosphates, bone manures, and similar fertilizers, are chiefly useful. It should be borne in mind, however, that more or less of the good effect of fertilizers, is due to their *indirect* action, in rendering stores of food, already present, available to crops. This is true of those just mentioned, and especially so with lime, and plaster, which is composed of sulphuric acid and lime. I am often requested to give some general formula for a fertilizer to be used as an adjunct to stable manure. But when we consider that different soils, and different crops, as well, have very different needs, it is easy to see why

No one Recipe can be Prescribed for Special Fertilizers for all Cases.

Stable manure is a complete fertilizer. It contains all the ingredients of plant-food, and its organic matter improves the mechanical condition of the soil besides. It is a standard fertilizer, and useful everywhere. The same is true, in less degree, of muck. To learn by what artificial fertilizers these can best be supplemented, is

A Matter of Experience and Experiment.

For farmers who have not their own experience, or that of others in like circumstances, to guide them, it seems to me the most sensible plan is to try experiments on a small scale, with different trustworthy fertilizers of high grade. The ones that prove most satisfactory, can then be used with confidence, in larger quantities. The amounts of *nitrogen*, *phosphoric acid*, and *potash*, which our commercial fertilizers furnish, is shown by analyses, of which some samples are given in

Table 27.

Analyses of Commercial Fertilizers.

Ingredients contained in 100 Pounds—or the Percentage.

	Names of Fertilizers.				
	No. 1. High Grade English Superphosphate.	No. 2. Guanape Guano.	No. 3. Ammoniated Superphosphate.	No. 4 Double Refined Poudrette.	No. 5. "Superphosphate of Bone."
	lbs.	lbs.	lbs.	lbs.	lbs.
Water (Moisture)	8.5	16.6	21.8	4.2	10.1
Organic and Volatile Matters	26.7	42.3	24.8	17.3	14.8
Phosphoric Acid	32.0	17.5	14.0	2.2	2.6
Lime, Plaster, and other Matters, not separately estim'd.	32.8	23.6	35.8	13.2	25.3
Sand, etc	....	....	3.6	63.1	47.2
	100.0	100.0	100.0	100.0	100.0
Valuable Fertilizing Ingredients in the above.					
Nitrogen in Organic Matter.	none.	9.37	1.62	1.41	1.0
(Equivalent to Ammonia)..	none.	11.38	1.97	1.71	1.2
Phosphoric Acid, Soluble.	23.3	5.8	9.9	....	....
Phosphoric Acid, Insol'ble	8.7	11.7	4.1	2.2	2.6
Total Phosphoric Acid, as above	32.0	17.5	14.0	2.2	2.6
Equivalent to Bone Phosphate of Lime	....	38.8	30.6	4.1	5.7
Retail Price per Ton	$62.00	$60.00	$42.50	$25	$50.00

These analyses were made at our Experiment Station, from one of whose circulars I take the following explanations, referring for further details, especially concerning phosphoric acid, soluble, insoluble, etc., to the "Talk about Artificial Fertilizers" in the February *American Agriculturist*, and "Correspondence" on page 154 of the present number. Of the ingredients mentioned,

The Water is that which dries out on heating at 212° Farenheit, No. 2 has 16.6 per cent, or 16⅔ lbs. in 100, and No. 4, has 4.2 per cent.

The Organic and Volatile Matters are those which may be burned off after the water is removed. They are so called "*animal and vegetable matters*," and contain the *Nitrogen* of these fertilizers.

Sulphuric Acid, Lime, etc.—If the ash which remains after drying and burning, be treated with strong acids, a portion will dissolve. This will include the *Phosphoric Acid*, the *Sulphuric Acid*, the *Lime*, and some other materials as iron, alumina, soda, silica, whose proportions are not determined. The *Sulphuric Acid* and *Lime* which, when combined, form sulphate of lime, or "plaster," though valuable, are not sufficiently so to make them worthy of special account in analyses of high-priced manures. The other materials have no agricultural value.

Sand.—The residue which resists the action of both fire and strong acids, consists of silica and other mineral matters. These have no fertilizing value, and are classed as *Sand*. While Nos. 1 and 2 had scarcely any of these, No. 4 had 63.1 per cent, or 1,262 lbs. to the ton! The important ingredients of the above fertilizers (which contain no potash), are *Phosphoric Acid* and *Nitrogen*.

Phosphoric Acid.—Soluble, is readily available to the plant, while in the insoluble form it is much less so.

Nitrogen, Ammonia.—In our ordinary fertilizers, except sulphate of ammonia and nitrate of soda, much or all of the nitrogen exists in unavailable forms. By more or less rapid processes of decay in the soil, these are changed to other compounds, of which ammonia is one, and which the plant can readily use as food, 14 parts by weight of nitrogen are contained in and reckoned as "equivalent to" 17 parts by weight of ammonia.

The amount of valuable ingredients in the above fertilizers will appear more clearly if we give, instead of percentages, the number of pounds of each in a ton. Each one per cent, or 1 lb. in 100, is equal to 20 lbs. in a ton of 2,000 lbs. No. 1 would have 23.3×20, or 466 lbs. of soluble Phosphoric Acid. The figures thus calculated would stand:

Table 28.

Pounds of Valuable Ingredients and Sand in one Ton.

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
Phosphoric Acid, Soluble	466	116	198		
Phosphoric Acid, Insoluble..	174	234	82	44	56
Nitrogen		187.4	32.4	28.2	20.0
Sand, etc					

It thus appears that No. 1 yielded of Phosphoric Acid, soluble, 466 lbs; insoluble, 174 lbs., making together 640 lbs. of Phosphoric Acid to the ton. This was a very pure superphosphate of a much higher grade than is often seen in this country, though such are very common in Europe. Contrast this with No. 5, which though sold as a *superphosphate*, had no soluble phosphoric acid, and only 56 lbs. insoluble phosphoric acid in the ton. Mr. J. H., of Connecticut, requests me "to give us farmers some rules by which to calculate the value of a fertilizer from an analysis," and adds, "If you will illustrate the rule by some examples it will be all the better."

Agricultural and Commercial Values of Fertilizers.

The *Agricultural Value of a Fertilizer*—the gain which will result from its use in a given case—is subject to such varying conditions of soil, climate, culture, and crop, as to preclude the possibility of exact estimate. The *Commercial value* being dependent upon its composition and the state of the market, admits of more nearly correct calculation. When Mr. H. buys sugar and coffee, his bill is made out by multiplying the number of pounds of each article by the price per pound, and adding the two products. On the same principle it is customary to make estimates of the commercial value of fertilizers by giving a certain value to each pound of the valuable ingredients they contain. Thus, Prof. Johnson, Chemist of the Connecticut Board of Agriculture, in his last report, assumes for *Phosphoric Acid*, soluble, 15 cts.; reverted, 10 cts.; and insoluble 6 cts. per lb., and for *Nitrogen* in bone (not finely pulverized), 20 cents; and in ammoniated superphosphates and guano in which it is, generally, more available, 25 cents per lb. At these rates the 466 lbs. of soluble Phosphoric Acid in No. 1 would be worth (466×15), $69.90, and the 174 lbs. insoluble Phosphoric Acid (174×6), $10.44, and the two together ($69.90+$10.44), or $80.34, which would be the estimated commercial value per ton. The table below gives the values as thus calculated, together with the selling prices:

Table 29.—Calculated Commercial Value of Ingredients in a Ton, and Selling Price.

These numbers refer to Table 27, above.	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
Phosphoric Acid, Soluble	$69.90	$17.25	$29.85	$	$
Phosphoric Acid, Insoluble..	10.44	11.02	4.92	2.64	3.17
Nitrogen		46.85	81.0	7.00	5.10
Total Estimated Value	$80.34	$78.12	$42.87	$ 9.64	$ 8.27
Selling Price	$62.00	$60.00	$42.50	$25.00	$55.00

It is but just to say, that No. 5 was a fraudulent article, such as no substantial dealers will handle, and that the most of the fertilizers sold in this region come nearer in composition to Nos. 2 and 3.

The above method of estimating the commercial values of fertilizers is not in all respects satisfactory. The Experiment Station circular referred to, gives calculations of the cost of each pound of the valuable ingredients. Without explaining the mathematical processes employed, I give results in

Table 30.—Actual Cost Per Pound in Cents, of the Valuable Ingredients of these Fertilizers when bought at the Selling Prices Stated.

One Pound of Each Ingredient Costs in	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
	Cts.	Cts.	Cts.	Cts.	Cts.
Phosphoric Acid, Soluble	11.8	11.5	14.8		
Phosphoric Acid, Insoluble..	4.7	4.6	5.9	15.5	41.1
Nitrogen		19.2	23.6	64.5	167.0

High and Low-priced Fertilizers—Frauds and their Prevention.

The above table is worthy of most careful study. The soluble phosphoric acid in No. 1 costs 11¾ cts., and in No. 3, 14¾ cents per pound. The insoluble acid varies from 4¾ to 41 cents per pound. And while a pound of nitrogen costs 19⅕ in the guano, in the poudrette it costs 64½, and in No. 5 167 cts.! If any man were to pay 41 cents a pound for nails he might buy for 5 cents, or $1.67 a yard for one kind of cloth when another equally good could be had for 20 cents, we should hardly have words to describe his folly. And yet hundreds of shrewd, careful farmers in this good country of ours, are buying nitrogen and phosphoric acid, at prices from 35 to nearly 300 per cent, and more, above what they need to pay. For the guano and superphosphates the above comparison is a just one. But it fails to meet so aggravated a case as that of the fraudulent phosphate, No. 5. Here the buyers not only paid 41 cents for every one of the few pounds of insoluble phosphoric acid, and $1.67 for each pound of nitrogen, but with every ton of the fertilizer they put on their land, they had to haul and handle 943 pounds of sand, which neither fire will burn nor the strongest acid dissolve, and they bought besides a quantity of fragments of wood and coal and other equally worthless material.

In the Experiment Station circular referred to, occurs the following:

WHAT HAVE THE FARMERS OF CONNECTICUT TO DO ABOUT THIS MATTER?

The answer to this question is simple.

1st. Let them buy only those fertilizers whose chemical composition is distinctly stated and guaranteed by the seller.

2nd. Of these, let them select the ones which furnish the fertilizing ingredients their land and crops need, in the best form and at the lowest price per pound.

If they are not certain that the articles they purchase are equal to the guarantee, let them send carefully and fairly chosen samples to the Station for analysis.

In brief, let buyers and sellers know what is the composition of their fertilizers, and give preference to those in which, not the whole bagfull or ton, but the valuable materials contained therein, are the cheapest. In this way, poor and fraudulent articles will be driven from the market, honest dealers will be encouraged to sell, and progressive farmers to use good articles, and tens of thousands of dollars will be saved every year to them and to the State. By this means and this means alone, can the much needed regulation of the trade in commercial fertilizers be brought about.

For some descriptions of other fertilizers, see "Correspondence," page 154.

Forest Tree Planting.

THIRD ARTICLE.

When a farmer has decided to plant trees, and has made up his mind as to the kinds he will plant, he is met by the question "How shall I get them?" and it is to this that we shall devote the present article. Trees are to be procured in two ways. 1st. They may be obtained as seed or cuttings, and raised from those; or 2nd. They may be had as young trees, either taken from the forest, or raised by the nurserymen who make it a business. The question whether one shall raise his own trees, answers itself in the affirmative, in the case of a very few; all those raised from cuttings, most prominent of which are the Willow and Poplar, or Cottonwood, grow so readily that there is every reason why the farmer should procure cuttings, as their cost and transportation is greatly less than that of trees; they are much more easily and cheaply planted, and are almost as certain to grow as cuttings, as they would be if they had roots. Then there are certain trees that are so difficult to transplant, that they rarely succeed unless the seeds are planted where the trees are to stand; prominent among these are the Hickories, Black Walnut, Butternut, and perhaps the Oaks, though many assert that these may as well be transplanted. The remaining trees, including Evergreens, are raised from seeds in beds, transplanted usually at the end of two years, either into rows, where they grow one, two, or more years, before setting in place, or are set directly in the plantation, the treatment depending upon the kind of tree. There are but few subjects upon which we have more inquiries, than this of raising forest trees from seed; since the article which appeared last month, several have written to request us to be sure and tell about raising them this month. We are aware of the great interest felt in this matter, but first let us consider whether a farmer had better raise his trees from seed at all? Should one come to us with this question, we should answer in what is called the "Yankee fashion," something thus: Have you heretofore worked in the garden? Do you work in the kitchen garden, as a matter of choice, or do you manage as a wealthy old farmer we once knew in Michigan did? He would hire a man to cut wood, but take the axe himself, and send the hired man into the garden—he would not be known as a man who hired a gardener. If the wife's or daughter's house plants are weakly, do you interest yourself in them, trying to find out if the trouble is poor soil, worms in the pot, "bugs" on the leaves, or what not, and then try to learn and apply the proper remedy? Have you force enough on the farm to allow you to leave the field at any time, and spend half a day, more or less, in the garden? In short, have you the time, knowledge, skill, patience, and more than all, the taste, which would allow you to give the tree seedlings the care they need? If so, then raise your own trees, for with these, it is not difficult. If you have not these, buy the young trees, and do something else to earn the money to pay for them. Tree seeds, on the whole, require more care than vegetable seeds, and it is often more difficult to manage a bed of the hardiest forest trees, than one of the most delicate flowering plants. We would not discourage any one who would grow trees from seed, but it is well that all should know at the outset what to expect. One who is familiar with farm crops only, is no more qualified to raise a lot of tree seedlings, than one who has only taken care of cattle is to assume charge of an apiary; in either case the intelligent person will wish to learn what is necessary to be done. To show that we have not overestimated the difficulties, we will give an instance in which those who have the largest experience, and who make it their sole business, often meet with great losses. Last fall we were at the nursery of Robert Douglas & Sons, at Waukegan, Ill., where forest tree seedlings are raised more extensively than elsewhere—literally by the million, and where acres upon acres are under screens of brush. Mr. Douglas took us to his seed beds, saying that from absence and illness they had not had their usual attention, but he was not prepared for the sight which awaited him. There had been rains and damp weather for a week or two, and in this time the weeds had made fearful havoc in his beds; a nut-grass, (*Cyperus*), had taken possession of some, while a *Marchantia*, or liverwort, that green, flat growth often seen in damp places, and on the surface of the earth in flower pots, had spread itself in sheets over the beds, choking and destroying the young seedlings. Here were thousands upon thousands of young trees, from an inch to three inches high, swept off at once, and, as many of the beds were of the rarer California Evergreens, the loss in the cost of seed must have been large. The farmer who raises his own trees, has to contend with losses from excessive moisture, and from other causes. Hence we say that in the majority of cases it is better to buy the trees from those who raise them as a business. It may happen that there will be in a neighborhood some one who can give the requisite care to them; and he may arrange with the others to raise young trees for them, to the benefit of all concerned, for we wish it to be distinctly understood that there is nothing that need prevent the farmer from raising trees from seed, if he can *afford to do it.*

To return to trees from cuttings. In localities absolutely tree-less, and exposed to strong winds, it is advisable to plant a shelter to break the force of prevailing winds, as it will be difficult to get many forest trees to grow unless they have this at first. Cuttings of White Willow or Poplar may be set at once. The cuttings should not be less than 8 inches long and 1/3 inch in diameter, and better if a foot long and an inch thick. Some prefer truncheons 4 feet long and as large as one's arm, but these are difficult to get. A strip 3 feet wide should be well plowed, and the cuttings set a foot apart in a single row, or two feet apart in two rows two feet from one another. Set well down, with the upper bud just at the surface. In two years these will afford some protection to other trees, and in five years it will be ample. N. B.—Unless the plants can be kept as clean as a corn-crop all through the summer, don't set any.

As to seeds that must be sown in place: Hickories, Black Walnut, and Butternut. It must be recollected that these, though the most robust of trees, are in their infant state more bothersome than a Geranium, and unless they are partly sheltered from the hot sun and cutting winds, will suddenly "miff." If a tree is wanted here and there, two or three seeds may be put near together in a sheltered place, taking out all but one the second year. A profitable way is to plant Hickories thickly, allowing for thinning for hoop-poles and other uses. Here the ground must be devoted to the plants. The nuts may be planted in rows 6 feet apart, and a foot apart in the row; a sufficient number of rows of Indian corn must be sown through the plantation to afford abundant shade and protection against the wind—in every third or fourth row, according to the hight of stalk; this should be continued the second year, changing the row, and of course providing manure for the corn. Unless these above named seeds have been well preserved through the winter, it is better to wait until next fall, then get the seeds and pack them in boxes with sand, or put them in heaps out of doors and cover well with turf.

Seeds to be raised in a seed-bed, in some cases come up as readily as beans, and in others lay two and three years before they start. Among the slow ones are the Thorns and Red Cedar. Having prepared a good seed-bed, of fine, rich, open soil, the larger seeds, like Locust, may be sown in rows, and the smaller, like the majority of Evergreens, Birches, Larch, etc., may be sown broadcast, raked in, and rolled. All seed-beds are better, and those of Evergreens *must be*, provided with shade. On a small scale a lattice of laths, made with the laths as far apart as wide, and supported a foot above the bed will answer. On the large scale, the labor of removing the screens would be enormous, hence a shelter high enough to work under is important. We have alluded to the screened acres of R. Douglas & Sons; these screens are 7 feet high, and are made by setting posts in the ground, nailing strips from one to the other at the top, and laying on brush or limbs of any kind. An absolute shade is not so much needed as a partial one, and there must be an abundant circulation of air among the plants, and they must have light enough for a healthy growth. Sow as early as the beds are ready.

Some seeds need preparation before sowing. The common or black Locust should be scalded. Button Ball, which grows readily from cuttings, needs soaking. Osage Orange should be sprouted by scalding, pouring off the water, and keeping moist and warm until the germ shows. The Ailanthus and Pawlonia grow readily from pieces of the roots, and so do many of our ornamental shrubs, but it needs further experiment before we know the extent to which this mode of propagation may be applied; in Europe it is used for the Locust and some Elms. The root-cuttings should be taken up in the fall, cut into pieces 4 to 6 inches long, mixed with earth in a box, and buried where water will not stand. These are to be set in the spring. Nearly all large seed-dealers keep the tree seeds most in demand; those who make a specialty of them are Arthur Bryant, Jr., Princeton, Ill.; R. Douglas & Sons, Waukegan, Ill.; Thomas Meehan, Germantown, Pa., and J. M. Thorburn & Co., N. Y. City.

A Country or Village House Costing $2,900.—For Physicians, Lawyers, Clergymen, Justices, Notaries, Editors, Etc.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan is designed to meet the wants of a large class residing in the country, or smaller villages, who are not only directly interested in agricultural pursuits, but who have also some professional or official vocation, such as: Physicians, Lawyers, Justices, Notaries, Clergymen, etc. They require in connection with their residences, an apartment adapted to their special callings, that shall in no way interfere with their domestic arrangements, where all persons making business calls may enter without feeling that they are intruding on the privacy of the household.... **Elevation** (fig. 1).—The exterior outlines and dress of this plan are a fair representation of the prevailing styles of American rural house architecture, in its most genteel and practical forms. There is a manifest propriety in the strong and decided features of the exterior finish of this example, wherein each part has its distinctive characteristics of utility, harmony, and truthfulness—a combination that never fails to please even the most tasteful, and it may therefore be regarded as the real basis of beauty. We frequently meet with oddly proportioned country houses, evidently constructed solely with regard to utility, that present a stunted and cadaverous appearance, having been shorn of their beauty through a mistaken idea that *economy* precludes the least indulgence in taste. Good

taste only demands that every separate part of any building shall be in harmony with the whole, and this feature of harmony is not so much a subject

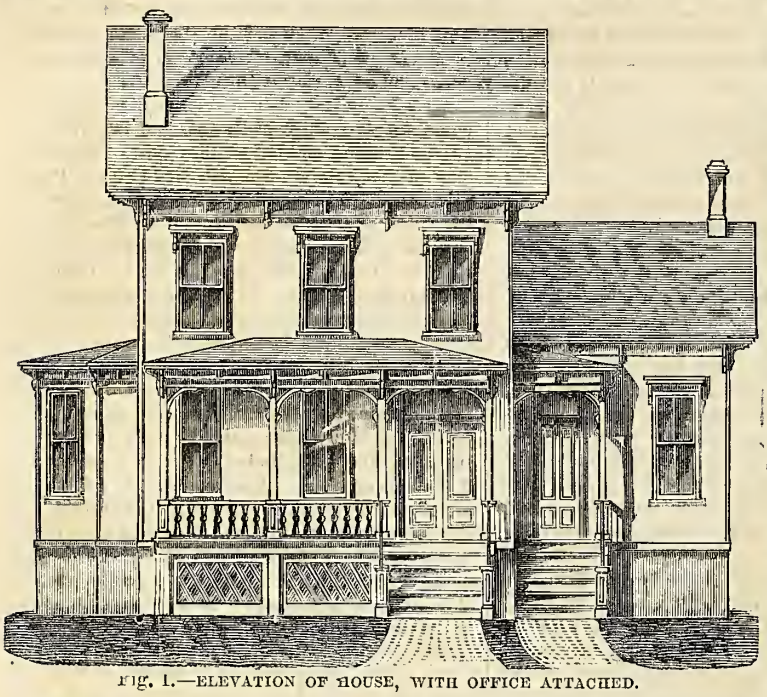


Fig. 1.—ELEVATION OF HOUSE, WITH OFFICE ATTACHED.

of expense as of expression, being a result of *mode* rather than the *matter* of construction. The materials necessarily required for any building, assume

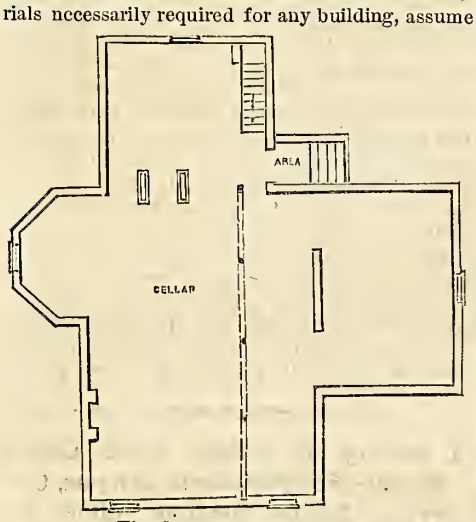


Fig. 2.—PLAN OF CELLAR.

shape and expression, according to the methods of their application, and they may be applied in disproportion, so as to be of permanent disgrace; whereas the same materials properly and intelligently used, with a like expense of handling, develop into proportionate and expressive forms of elegance and grace. A building constructed as indicated by these plans, presents a pleasing appearance from any direction, each face being broken by wings or other projections, which give relief from the formalities of a large flat surface. From the front there is an expression of completeness indicating full provision for comfort, and an air of contentment. From the sides are presented to the best advantage the more extended surfaces, including the large corniced gables of the principal building, the rear wing, and other projections. The rear has an equally finished and satisfactory appearance.... **The Cellar** (fig. 2), is the full size of the ground plans, with a clear hight of 7 feet. The 5 cellar windows are placed where they will admit light to every part. An outside entrance is under the rear lobby, and a stairway leads directly to the kitchen.... **First Story** (fig. 3).—The arrangement is very simple and convenient, comprising good-sized Hall, Parlor, Living-room, Kitchen, Office, Study, 5 Closets and 2 Stairways, with ceilings 10 feet high. The Parlor is pleasantly situated, has 2 front windows opening directly to the piazza, from which they derive shade and protection. The Dining or living-room opens into the hall, parlor, and kitchen, and has two closets. One end of this room is octagonal, and extends 6 feet beyond the face of the principal wall, with 3 windows affording a pleasant outlook. The Kitchen adjoins the dining room, has two closets, is fitted up with a Range, Sink, and Wash-tubs, and is conveniently connected with the cellar and with second story by private stairways. The Office is entered from the front porch, and is in direct communication with the principal hall, has a good sized closet from the space under the principal stairs, and has a private room or Study..... **Second Story** (fig. 4).—This is divided into 4 commodious apartments, besides a hall, Bath-room, and the necessary closets, and has ceilings 8 feet high in the main building, and 7 feet in the rear wing. The Bath-room is provided with a seat closet and bath-tub. An inclosed stairway leads to the *Attic*, where two or more bedrooms may be finished, besides leaving space for garret purposes. The Tank placed over the ceiling of the bath-room, is arranged to receive water from the principal roof, and is provided with an overflow pipe leading to the cistern.... **General Requirements.**—Full brick foundations are estimated for. Where coarse stone can be had, they answer as well, and at less cost, for the portions below ground; they should be laid even with the brick-work on the inside when finished. The wood-work is to be substantially constructed of good and sufficient materials throughout. The Roofs of the piazza, stoop, bay, lobby, and window caps, are covered with charcoal tin, and in each case an allowance is made for a "flashing" of six inches in width to turn up behind the siding to prevent leakage. The principal and the two wing roofs are each covered with dark slate with ridge plates of zinc. The Gutters are to be those described on page 173, *American Agriculturist*, 1875. The joinings of the wing roofs against the main building are made perfectly tight by laying in, against the building, right angle strips of zinc or

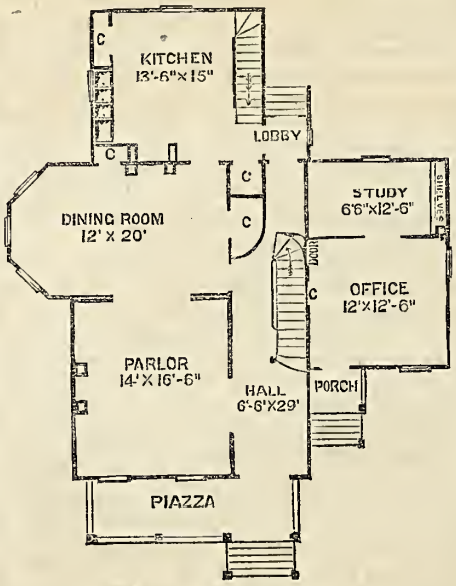


Fig. 3.—PLAN OF FIRST FLOOR.

tin "flashing," with each course of slate before the siding is put on. Slate is unquestionably the best material for such roofing when the form of roof will admit of its use; its cost is the same as for good tinning, and about 2 cents per square foot in excess of pine shingles; when once properly done will last for centuries; it is fire-proof, and the water from it is much purer, an important consideration when rain and cistern water is used for cooking or drinking. Its color and appearance are agreeable—in fact roofs of other materials are often painted in imitation of slate from choice.....The most expressive portions of any buildings are their projecting cornices. As a rule, for houses of this style, such projections should be *one inch for every foot of their hight from the foundation.* And the same rule will apply to every detail of the exterior finish; for example, as in this case, the principal building being 22 feet high at the plate, the principal cornices should project 22 inches; the piazza being 11 feet high, its cornice projects 11 inches; the windows 6 feet high, have caps projecting 6 inches, etc. By this simple rule all such projections may be readily determined, and thus secure perfect proportion and harmony of parts....The inside Plastering is "three-coat work." All side walls should be continued down *close* to the floor, and care should be taken to make the walls straight and true, with the second coat of "browning," for the last or white coat, though applied in the best manner, can never overcome malformations in the body of the plastering; on the contrary, the finer the finish of last coat, the more visibly will such defects appear. In the

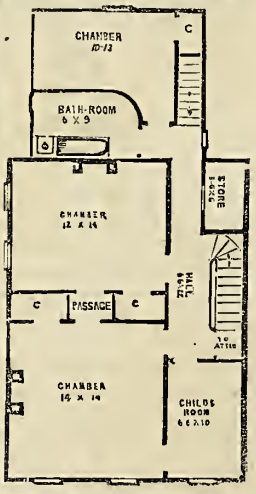


Fig. 4.—PLAN OF SECOND FLOOR.

concluding estimate, 35 cents per yard is allowed for the cost of plastering, which is ample as shown by these calculations *for* 100 *yards*, viz:

2,000 Lath @ $2 ℔ 1,000	$4 00
10 lbs. Lath Nails @ 7c. ℔ lb.	70
4 barrels Lime @ $1.30 ℔ barrel	5 20
5 loads Sand @ 40c. ℔ load	2 00
1 barrel finishing Lime @ $1.60 ℔ barrel	1 60
½ bushel Plaster, 50c.; 1 bushel hair, 50c	1 00
Cartage	3 00
Labor Putting on Lath, @ 15c. ℔ bunch	3 00
½ day Laborer (mixing mortar), @ $1.50 ℔ day	75
1½ days Mason (work), @ $3 ℔ day	4 50
1½ days Laborer ("tending" mason), @ $1.50 per day	2 25
Use of Screen, Water Barrel, and Scaffolding	2 00
Total cost for 100 square yards complete	30 00
Profit	5 00
Estimated at 35c. ℔ yard	$35 00

In some localities a practice prevails among masons of including in their measurements of plastering one-half of the openings of doors and windows, which is obviously unjust, and a frequent cause of dispute. Such openings will average at least 2 yards each—in this house would aggregate 50 yards—and in every case should be deducted, unless otherwise agreed previously. **Estimate:**

113 yards Excavation, @ 25c. per yard	$28.25
12,000 Brick laid complete @ $15 ℔ 1,000	180.00
47 feet Stone Steps, and Coping, @ 30 c. per ft	14.10
841 yards Plastering, @ 35c. per yard	294.35
5,135 feet Timber, @ $2 per M	102.70
viz. 1 Sill, 4x8 in. x 200 ft. long. Plates, 4x6 in. x 100 ft. long.	
1 Girder, 4x8 in. x 30 ft. long. Ties, 4x6 in. x 330 feet long.	
7 Posts, 4x7 in. x 21 ft. long. 1 Ridge, 3x7 in. x 26 ft. long.	
2 Posts, 4x7 in. x 18 ft. long. 20 Rafters, 3x5 in. x 20 ft. l'g.	
2 Posts, 4x6 in. x 12 ft. long. 35 Beams, 3x8 in. x 22 ft. l'g.	
Piazza, 3x8 in. x 82 ft. long. 9 Beams, 3x8 in. x 19 ft. l'g.	
Piazza, 3x5 in. x 40 ft. long. 21 Beams, 3x8 in. x 13 ft. l'g.	
4 Locust Posts in Cellar, @ 30c. each	1.20
375 Wall Strips, 2x4, @ 13c. each	48.75
170 lbs. Tarred Paper or Felting, @ 3c. ℔ lb.	5.10
330 Siding, 10 inch, @ 28c. each	92.40
Materials in Cornices, Water-table, etc	60.00
213 Hemlock Boards (for roofing), @ 20c. each	42.60
18½ squares Slate Roofing, @ $9 ℔ square	166.50
3 squares Tin, @ $8 ℔ square	24.00
300 Flooring, 9 in. @ 28c. each	84.00
Stairs, complete	100.00
5 Cellar Windows, complete, @ $6 each	30.00
18 Plain Windows, complete, @ $12 each	216.00
35 Doors, complete, @ $10 each	350.00
Piazza, Porch, and Lobby, complete	150.00
4 Mantels, complete, @ $20 each	80.00
Closet finish, complete	25.00
Range and Elevated Oven, etc., complete	80.00
Plumbing, complete	175.00
Bells and Speaking Tubes, complete	15.00
Nails, $25; Painting, $200; Carting, $35	260.00
Carpenter's labor not included above	250.00
Incidentals	25 05
Total Cost, complete	$2,900.00

The Care of Early Lambs.

The subject of the engraving here given, was suggested by a thoughtful correspondent, and will no doubt recall to the minds of many shepherds the loss of early lambs, that might have been saved, had they been carefully nursed through a severe chill, occasioned by a cold storm in spring. It is safe to estimate that at least one-tenth of the lambs that are dropped fail to reach maturity, either through accident, or want of care, or from exposure to sudden storms. Young lambs are naturally hardy, and dry cold scarcely affects them, while a cold rain or a snow storm quickly chills and paralyses them. After the lambs have been sent to the fields with the ewes, extra watchfulness should be exercised, especially at a season, when sudden changes are likely to occur. The chilled lamb may sometimes be found seemingly dead, with nothing but a slight quivering of the eye-lids, to denote that life remains, or stiff and convulsed. In such cases an immediate warm bath, and rubbing dry with a soft flannel cloth, will nearly always revive the lamb; a tea-spoonful of hot whisky or gin and water, will aid the recovery. If this is not at hand, a little hot ginger or peppermint tea, sweetened, may be used. Before the lamb is again turned out of doors, it would be benefited by some protection. In some places where sudden late cold storms are expected at this season, the shepherds provide themselves with pieces of blanket or carpet, with which they cover the bodies of the lambs. These are fastened upon the lamb by drawing the edges together beneath the belly and in front of the chest, by means of one or two stitches, and the covering remains until the danger is past. Our correspondent suggests using legs of worn out knitted stockings, the legs to be drawn over the lamb's body. The most vulnerable part is the back along the spine. The nervous system which concentrates in the spine, is much more extensive than that which centers in the brain. In the sheep there are ten pairs of nerves centering in the brain, and thirty pairs starting from the spinal cord. These spinal nerves convey both sensation and motion to the limbs. Any injury to these causes paralysis or loss of the power of motion to the limbs, and it is this which affects lambs more than any other trouble to which they are subject. Much of this certainly results from cold and damp, and the wool of the lamb, which is a protection against dry cold, helps to make matters worse, when it is wet with rain and snow. Thus it is that a warm bath applied to the back of a lamb, so soon helps to a recovery, and any protection applied there, is more effective than elsewhere. In very bad cases, when life seems almost extinct, and the warm bath of no avail, continued rubbing along the spine with liniment of ammonia, or spirits of turpentine, or other stimulating application, will restore the lamb. At this season it is well to keep the lambs near home, so as to avoid danger; the cost of a little extra food for the ewes, would be less in amount, than the loss of two or three lambs.

THE CHILLED LAMB.—*Drawn and Engraved for the American Agriculturist.*

Tim Bunker on Printer's Ink.

"Have you got a game ruster?" said Jake Frink to me one morning last week, as he came over to our house.

"No I haven't. What's up now?" I inquired.

"Why you see, Squire Bunker, that boy of mine, up in the White Oaks, has got it into his head that if he can raise some game chickens, he can make his fortune in a short time—says he won ten dollars on a bet last week on a fightin' cock—at a little set-to some of his neighbors had in his barn-yard, and if he had some smart rusters that would stand steel every time, he could make more money in a cock-pit in one month than he could peddlin' charcoal in a hull year—and I guess he's rite. Says he's got two pullets that is all rite, and if he can git a

ruster that is dead game, he would raise some chickens next season that would have the grit in 'em, and he would bet on the White Oaks agin the hull state of Connecticut. I knew you kept blooded fowls, and I didn't know but you might have some of that kind."

"No, I don't keep that kind. Why don't you use printer's ink?"

"Printer's ink!" exclaimed Jake, "I should like to know what that has got to do with it. I've heerd of printer's ink for canker-worms, but I never heerd of it for rusters—how d'ye apply it?"

"Just put it in the Hookertown Gazette under head of Wants—like this, "Wanted to buy a yearling cock, warranted dead game, Jacob Frink, Hookertown, Ct."

"Never did sich a thing in my life. Taint no use. I never read advertisements, and guess nobody else don't. They're pretty much all doctor stuff. Might be some use in it ef I was a Steam Doctor."

"Just try it," said I, "and if you don't hear of roosters in less than a week, I'll pay the bill."

I didn't much think Jake would advertise, but the notion seemed to work, especially my paying the bill, and I guess the thought of getting that on to me had more to do with it than his faith in printer's ink. He made a straightwake for the Gazette Office, and told the printer to advertise for a Game Rooster as above, and send the bill to me. The Hookertown Gazette is printed on Thursday, and distributed to town subscribers by carrier, and the rest sent off by mail. Jake got his paper the same evening, and for the first time began to look at the advertisements. It was quite a while before he could find his rooster, and when he did it only occupied the space of two lines, and seemed so ridiculously small, that nobody could notice it. He certainly would not have seen it, if he had not known it was there and been looking for it. He thought he had stuck Timothy Bunker this time, and would get square on the Horse-pond lot trade. Next morning Jake was waked just after daybreak by a loud knock on his door. Jake poked his head out of the chamber window, and shouted "who's there?"

Billy Peckham's voice answered from below, "I saw your advertisement in the paper last evening, Mr. Frink, and I thought I'd catch my rooster this morning before he got off the roost. He has licked in six fights, and will kill any rooster in town. He was a year old last spring, and cost me ten dollars. But if you want him for Kier you can have him for five dollars. If the White Oaks are goin' in to this business, I guess I'll sell out."

"Couldn't think of giving that," Jake answered, and shut the window in disgust. He put on his clothes, and while he was kindling his fire in the stove, another rap at the door. Ben Porter had brought up his rooster in a covered basket, said he saw the notice in the paper, and thought he would bring up his black-breasted red game, that he would warrant to stand steel, and lick all the roosters in town. The bird cost him fifteen dollars, and he had made a hundred on him, knowing just how to bet. He could have him for twenty dollars. Didn't care a cent whether he took him or not. Two men were after the bird, and he only offered him as a matter of neighborly accommodation.

"Twenty dollars," exclaimed Jake, "that's all a feller can git for a two-year-old steer. I ain't a fool quite."

Jake started to milk his farrow cow, and on his way to the yard, he met a boy with a game Bantam cock under his arm, in earnest to sell. He admitted the cock was small, but he was true as steel, and had whipt Deacon Smith's Buff Cochin, five times his weight, in a pitched battle. He hated to part with him, but would sell for three dollars cash on the nail. When Jake had done milking, he found at the barn-yard bars two more boys waiting for him, one with a cock in a bag, and the other with a bird under his arm. They were only common roosters, and Jake declined to buy. As he came out from breakfast, and was going to yoke the cattle, Mike Flaharty met him with a dressed fowl in a basket—"and sure it was a dead-game rooster that ye were wantin', and I thought Mistress Frink might be having company to dine, and I brought him up airly." Jake thought there was a difference between a dead-game cock and a cock dead, but failed to make Mike see it, and he went off in a pet. He now started on his sled for the wood-lot, and was hailed seven times on Hookertown street about that "dead game ruster." It seemed as if every man had rooster on the brain, and the boys rooster on the tongue. He began to think Hookertown had done nothing else but breed game birds for the last few years. Saturday he went down to the Grocery Store, where they keep the Post Office, for a jug of molasses, and Colonel Sizer, the postmaster, told him he had some letters, which was a very rare thing. He thought at once that some of his wife's folks must be sick or dead, especially as the letters were all post-marked Shadtown. He was thinking of a funeral when he opened the first letter, but there was nothing dead but that "game ruster." Every letter offered game birds varying in price from one dollar to twenty. As he opened the eleventh and last letter, and caught sight of that game bird, he dropped his spectacles, and made for the door. He did not stop until he reached the Gazette Office—where he offered the following advertisement for next week: "No more Game Rusters wanted, Jacob Frink."

Jake is converted to a firm faith in printer's ink, and there is not the least danger of his falling from grace. I wish we had more of these conversions. Not one farmer in ten pays out a dollar a year for advertising—either for what he wants or what he has to sell. He does not read the advertisements in his agricultural paper if he takes one—and if he ever ventures upon fine stock of any kind, he grudges a few dollars for printer's ink, and sells them to some middle-man who advertises and doubles his money. He thinks fine stock don't pay. Printer's ink would make it pay, and every thing else worth raising upon the farm.

Hookertown, Ct., Feb. 14th, 1876. } Yours to command, TIMOTHY BUNKER, Esq.

[The Squire's articles always have a "pint" to them, and this hits more directly than he thinks. Of late we have published illustrations of fowls of various kinds, and have been actually overwhelmed with letters asking where such birds can be had. Now we have no time to hunt up the names of the dealers and reply to these letters, many of which come each day. If poultry raisers wish to sell their stock they should follow Tim Bunker's advice and "try printer's ink." If only a small portion of the letters about poultry received by us within the last two or three months, resulted in purchases, several poultry yards would be exhausted. When we have described and figured a breed, there our part ends —we wish to state once more that we have no fowls nor eggs to sell, and do not expect to have.—ED.]

Among the Farmers.—No. 3.

BY ONE OF THEM.

A few weeks ago business took me among the farmers of the Valley of the Farmington, in Connecticut, and especially among those of the old town of Farmington itself. One may go far to find a better specimen of a New England country village. It lies on the western slope of the Talcott Mountains, near the southern end of the range. "Pinnacle Mountain," a hill higher than the rest, raises its picturesque cone directly in the rear of the village, while the swift-flowing river winds through the meadows, its waters sweeping in whirlpools, dancing in eddies, and laughing in ripples as if glad to escape the ponderous over-shots, and the din of the trip hammers of Collinsville, and the rattle and noise of the Unionville factories.

Broad and shaded is the single notable street, and upon it the old houses stand near, but not crowded; some of them which were built during the revolution, show the kindly skill of French officers who drew plans for them, or for the decoration of cornices and porches, as well as of the oak wainscoting within. I would be glad to know the history of the exquisitely beautiful ancient spire which surmounts the very plain old church, and is so conspicuous for its delicate grace as it rises out from among the elm tops, as seen from all parts of the broad valley. Its designer had the real sentiment of heavenly aspiration in him. Among the modern houses are some in whose construction, though very simple, the highest architectural talent has been employed.

A Village of Farmers.

Going through the village one is struck with the fact that nearly all the villagers seem to be farmers. A majority of the houses have a group of great barns close in the rear, and some of these are of the most modern and approved construction. I was particularly struck with one which might well be illustrated in the *American Agriculturist* on account of its practical character, combining excellence of plan, materials, and workmanship, many conveniences, and fine architectural proportions. It belongs to Miss Sarah Porter, whose famous school for young ladies is at once the pride and the life of the village, and who conducts a large farm with profit as well as enjoyment. Most of the farms are laid down to grass, which is natural to the soil, and there are many meadows which have not been plowed for 25 to 50 years, and which still yield moderate crops of hay and abundant pasturage. This fact alone might indicate that the people would be large stock-raisers, which is true. Farmington has long been famous for its

Fine Herds of Milch Cows.

As long ago as I began to take notice of such things, being occasionally here, the herds of cattle as they wound through the street morning and evening, made a strong impression upon me. And at this last visit the same was vividly renewed.

The ancient "native" stock of New England, which had a strong dash of South Devon blood, was brightened up, beautified, and reddened by the high-bred North Devons, which were largely introduced into Connecticut in the first half of this century. After this there were some excellent Short-horns brought into the town, and those of course wrought a great change. The size of the calves and the value of the veal was increased, while the size of the steers and working oxen, the weight of the beef, and the quantity of milk, all told the effect of the Durham blood, and rejoiced the farmers. Railroads made a market for milk, and quality was less an object then than was quantity, so these Short-horn grades were all that could then be desired. After awhile the Jersey began to come in, and there was one famous herd, that of the late John T. Norton, kept within the limits of the village. Mr. Norton's butter was so remarkable that he could get for it almost any price he chose to ask, and found a hungry market in Hartford and Boston.

The Farmington Creamery.

After the dissemination of Jersey blood among neighboring farmers had become somewhat general, though not on that account, Mr. Edward Norton, who took the farm after his father's death, stirred up his neighbors to join in erecting and sustaining "The Creamery." This is a butter factory, where, under Mr. Norton's superintendence, the milk of over three hundred cows is brought, weighed, cooled, set, and skimmed. The cream is taken from the milk after it has stood 12 hours. There is a ready market for a good portion of the sweet cream, and during the autumn and winter, for all the skim-milk which is sweet, of course. The greater portion of the cream is made into butter, which commands a high average above the market price, and is engaged in advance of production by fastidious customers in the neighboring cities, who are served weekly.

The creamery is situated near a fine spring which sends an abundant stream of water through the cooling tanks and troughs, and even in the hottest weather it maintains the milk at the most favorable temperature. The milk is set in deep cans, cylinders 8 inches wide and 20 inches deep. These stand in summer at the temperature of 55° to 60°, in winter considerably lower. In regard to the merits of

Deep and Shallow Setting,

Mr. Norton is of the opinion that though shallow pans are no doubt most profitable where butter only is the marketable product, yet for their ob-

jects, cream, butter, cheese, and salable skim-milk, the deep-can system is by far preferable. The leathery surface formed upon cream exposed to currents of air in shallow pans, is most undesirable when cream is sold. It is also far better that the milk sold should not be too blue; it is therefore well that a modicum of cream should remain in the milk. The creamery had not been long established when marked

Differences in the Quality of the Milk

received from different farmers, were observed. These for a long time formed a subject for study, for consultations among the directors, and finally the facts became currently known. While A's milk indicated 16 per cent of cream day after day, B's 14, C's 13 or 12, that of other farmers threw up only 9, and even 8 and 7 per cent of cream. The amount of butter made from the low grade and from the high grade milks when kept separate, showed parallel results, while the butter of the poor milk was of wretched quality. Yet there was no suspicion of watering, or other tampering with the milk. The differences in quality of milk resulted solely from the quality of the cows. Those herds in which there were the largest amounts of Jersey blood, produced the highest percentage of butter. Those having much Devon blood showed great richness also, while among the herds of big milkers, composed of natives and of Durham grades, a deficiency in butter was distressingly apparent.

It was to be expected that the beautiful and delicate Jerseys would not fill the eye of the old Short-horn breeders, any more than they filled the pail, if even so much. Still year by year the profit of good cream and butter has been more and more desirous, and as a consequence Jersey grades have been sought after. Recently, however, the attention of some of the best farmers has been turned towards

The Guernsey as the Farmer's Cow,

especially where butter is an essential product. The farmers agree, plausibly, that a breed of cows larger than the Jerseys, yielding a proportionately larger quantity of butter and of milk, producing fine large calves, maturing rapidly, and coming into productiveness, like the Jerseys, a year earlier than Short-horns, Ayrshires, or Devons, unless indeed great size is particularly desired, and being at all times ready when dry, to be quickly fattened to a good weight and turned off for beef, is just the breed to prove profitable for them under their circumstances. It was on this account that I was invited up to have a talk with them, having recently seen the Guernseys on their "native heath." So nothing loth, one evening in a quiet parlor, I opened my budget of things, new and old. Some fifteen well-to-do farmers discussed and questioned their policy in the matter until 11 o'clock. I have since been surprised at hearing of the readiness with which subscriptions were obtained for a dozen or more animals to be imported forthwith. They are wise in taking up this breed, and I sincerely wish them good luck in their venture. These cattle seem to have been bred without any reference to good looks, except the good looks of fitness for their great business of life, butter-making; and for their end in death—beef.

I wish that some good breeder on the Island would take a Short-horn cross, on the sly, and then "breed it out," retaining fineness of bone, smallness of head and offal, and being careful not to decrease the quantity or reduce the quality of the milk. But they cannot do it, and so the work of improving the breed will be slow, rapidly as it has been, and is going on. *We* cannot take such a cross and effect the improvement in this country, neither could it take place anywhere but on the island without virtually working a taint in the blood. In whatever way the improvement comes, there is a distinguished future for the Guernseys, and their popularity is sure to increase from their sheer merits.

Tobacco.

I found tobacco culture had greatly extended since I last visited the valley. The mild damp weather of the week or two before, had been made use of to take down the plants from the "poles" in the drying houses, and the farmers were busy at stripping, though the weather was cold and dry. The system there in vogue for hanging the plants to dry, and partly cure, is one I had heard of, but never seen in use. It is suspending the plants upon laths run through the stalks about a foot from the but ends. The laths used are like common plasterer's laths, but nearly twice as thick, sawed from clear stuff. At first they were simply pointed, sharp, and thrust through a slit made with a knife, now, however, one end of the lath is reduced a little, and a steel point, called a needle, is slipped over the end. This needle easily penetrates the woody stems, and thus several plants are strung upon one lath, which is then elevated into position and rests upon poles laid the proper distance apart. The weight of the plants holds the laths edge-up, and thus they are abundantly strong to sustain the weight, while this is of course growing less every day as the plants dry. The needle is not permanently attached to the lath, but slipped from one to another as they are used. It is a very convenient and simple plan, and is not patented, at least so far as the tobacco-growers of that section know.

Keeping Small Quantities of Milk.

It is often a matter of importance to take the very best care of the milk of one or two cows. Where there is a considerable herd, it is usual to find a nice dairy room shut off from the rest of the house, conveniently near the ice-house and cooled by its proximity, or near a cold spring, the water from which may be distributed in pools or cooling tanks, in which the milk may be set. This is, however, impracticable, on a small scale, and for this reason at certain seasons not half the value of small quantities of milk is realized. In winter the family store-room or kitchen closet, is often used to set the milk in, and in summer no properly cool and ventilated apartment can be found. In the winter the fumes of cooking and smoke, or of the family living-room, fairly taint the cream, and in the summer the milk will not keep sweet, may be exposed to flies, drafts of dust, and often to foreign odors. Mice are also frequently annoying. I know this from multifarious experiences, and am happy to see my way out of the dilema through

My Neighbor's Milk Closet,

or rather through his ingenuity. He is an eminently practical man. I claim to be moderately so myself, but his thoughts have taken a happier turn than mine in this particular direction, or else he borrowed his ideas—certainly he was free to lend them to me. He had a box made of white wood, white oak would have been better, but both are nearly *odorless*, as large as could be taken down his cellar steps through an ordinary door, say 2½ feet wide by 4 feet high, by 5 feet long. In one of the upper corners a smaller box was made, say 18 inches to 2 feet wide and deep, and as long as the width of the closet; the *side* towards the closet was made of strong slats an inch apart, and in the bottom a pan of zinc was placed. This is the ice-box. The drip is carried off by a leaden pipe from the zinc pan; the ice is supported on slats, and is wrapped in a blanket when it is desired to economize and prevent its thawing.

The closet has a large door, not going to the bottom, on one side opposite to the ice-box, and shelves whereon to put pans or cans of milk and other odorless articles, butter, cream, puddings, custards, etc. There is free air communication between the closet space and the ice, and as the surplus moisture from the air is deposited upon the ice, the air in the closet is always dry, and drops do not form upon the sides. He finds that cooked, and even raw meats, may be put into the ice-box, and will have no effect on the air in the closet. This may be problematical, but I think it is clear that such things if sweet and good could not have much effect, because I believe most odors are disseminated by means of the moisture in the air. This closet would be more economical of ice if it were double and lined with some non-conductor, but it certainly answered a very good purpose last summer, and I shall try something of the kind. The temperature may be somewhat regulated by the quantity of ice used.

Planting Corn—A Marker.

What would be thought of a mechanic who should rip his boards from a log with the old-fashioned whip saw and plane them or match them, by hand, or who should work out his nails on the anvil one at a time by hand labor? He would hardly earn enough to find himself in bread alone. Yet in an equally old-fashioned, costly, and unprofitable way do thousands of farmers plant and cultivate their corn crops. The ground is plowed, harrowed and marked out both ways, either with the plow, or sometimes by a quicker method, with a corn marker. The seed is dropped by hand and covered by hand with a hoe; the crop is hoed by hand or plowed in the old method, leaving the ground ridged and deeply furrowed, so that in a dry season the corn suffers for want of moisture. All this costs so much that the farmer's labor brings him about 50 cents a day, upon which he lives, grumbling that "farming does not pay." This method would be ruinous in the west where corn is a staple crop, and that it is not so in the east is simply because it is not grown to a large extent. But there is no crop that may be grown so cheaply and easily in the east that produces so much feed as corn. Fifty bushels of corn and four tons of fodder per acre contains more dry nutriment than thirty tons of turnips or mangels, and may be grown with less labor and less cost, if only the best methods are employed. Now with the excellent implements and machines that are in use for planting and cultivating corn, no farmer can afford to work this crop in the old-fashioned method. There is no longer any need to plant in squares, for the crop may be kept perfectly clean when planted in drills, if the proper implements are used. There are several corn planters by which the seed may be dropped and covered at the same time in single or double drills, at the rate of eight to twenty acres per day. By using the Thomas harrow a few days after planting, every young weed will be killed, and the crust, which so often gathers upon the surface, will be broken up and the surface mellowed. The harrow may be used without damage until the corn is several inches high. Then any one of the many excellent horse hoes may be used, by which the weeds may be cut out of the rows close to the corn until the crop is so high that farther working is useless. This method of cultivation may cost $2 per acre, or less, as the ground may have been kept free from weeds in previous years, while on the old-fashioned system it may cost $10 per acre, or more, as the weeds may have been allowed to get further ahead.

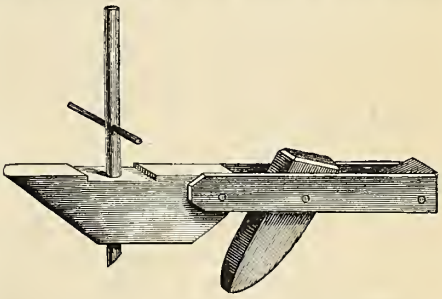


Fig. 1.—RUNNER AND TOOTH FOR MARKER.

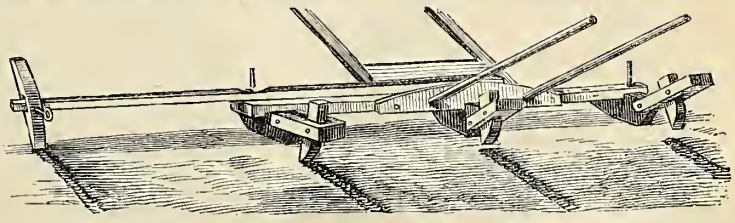


Fig. 2.—THE MARKER AT WORK.

Nevertheless, there are farmers who will still

work on the hand to mouth plan, and will still mark out their crops by a marker and drop the seed by hand. For these it will be convenient to have at least a good marker, and such is here illustrated in due season for one to be made before it will be needed. It will mark uneven as well as level ground; it can be set to any width between rows;

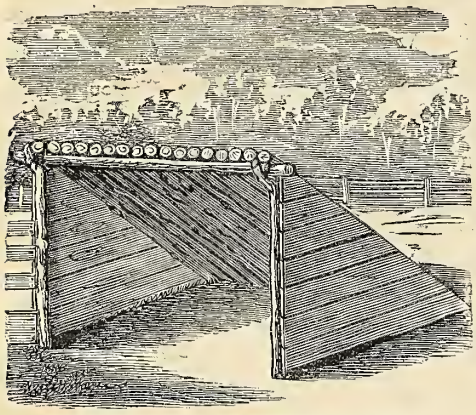


Fig. 1.—SHELTER OF POLES AND BOARDS.

any farmer or smart boy can make it, and the inventor, who is a farmer in Canada, does not propose to patent it. The marker is made of 2×4 scantling, one piece being 8 feet long. In this five holes are bored, one for each of the runners, 1½ inch in diameter. The runners are also of 2×4 timber, and 18 inches long. Holes 1⅛ inch in diameter are bored through the runners, in which are placed hard wood pins 14 inches long. These are driven in from the bottom, the ends being left broad, so that they may not pass through the holes, and projecting an inch and a half. This is shown in figure 1. The small pin which passes through the larger one serves to connect the runner with the principal timber, and by shifting the large pin from one hole to another, the runners may be brought from 4 feet to 1 foot, or even 6 inches apart, and made to mark rows of widths increasing by spaces of 6 inches up to 4 feet. The marker given in figure 1 is very clearly shown, and needs no further description. When one of the markers meets with an obstruction it is lifted by it, as seen in figure 2, and passes over it. A guide marker is fixed by a hinge to one of the outside runners, and carries a scraper which is held in place by a pin, by moving which the distance of the next row may be regulated. A pair of

Fig. 2.—SHELTER COVERED WITH STRAW.

light shafts may be attached to the marker, and a pair of handles by which it may be guided.

Clover seed.—The present high price of clover seed will doubtless disagreeably surprise many farmers who failed to save their seed last year. Saving one's own clover seed is one of those small things which is worthy of more consideration than is generally given to it, and is one of the neglected economies of the farm. At present prices of hay and clover seed, the usual crop of the latter five bushels per acre, is worth $40, or two or three times the value of the ordinary crop of hay. This sum per acre is a handsome yield for a second crop, and is well worth working for. Clover cannot be substituted by anything else. Farmers cannot do without it and prosper. It will be a misfortune if the present high price of seed should prevent farmers from sowing it, and it will be a powerful reminder of the advantage of always securing a home supply. Besides this, when the seed is raised at home, the absence of weed seeds can be depended upon, which is an impossibility if the seed is purchased.

Cheap Temporary Shelters for Stock.

BY L. D. SNOOK, YATES CO., N. Y.,

In all newly settled districts, and in many old settlements, a cheap and temporary shelter for stock is often desirable. While there is but little new to be said about the construction of these, yet the hints given, if heeded, will not only add to the comfort of thousands of animals, but save money to the stock raiser and farmer. Whenever it is found practicable, the shelter should be located upon the east or south side of a forest, or a hill, in order that the force of the wintry winds may be broken as much as possible. The cheapest shelter is made from poles, as shown in figure 1, covered with straw or refuse hay. Two crotched posts, 8 ft. in length, are set two feet in the ground, and from 12 to 20 ft. apart; these are connected at the top by a strong

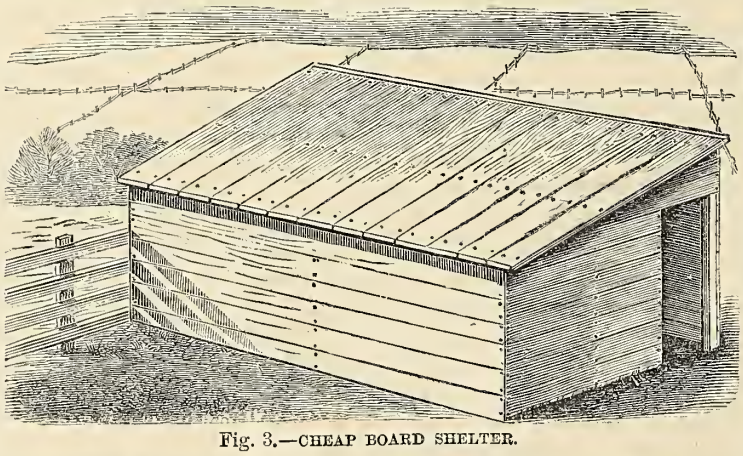


Fig. 3.—CHEAP BOARD SHELTER.

pole, upon which rest the upper ends of other poles, 12 or 15 ft. in length. The ends of this shelter are boarded up as shown in fig. 1. A warm and comfortable shelter is illustrated in fig. 2: six strong posts are set in the ground, forming the corners and sides of an enclosure, about 12 by 15 ft., and 6 ft. high. These are boarded up on three sides, and roofed with strong plank or poles, the whole overlaid with straw; the covering is best and most economically done at thrashing time, by building the frame-work in the barn-yard. A cheap board shelter is shown in figure 3. In making one after this form, 14 feet wide, the highest part should be 8 feet, and the lowest about 5 feet, using 16 foot-boards for roofing, which will project upon each side. The roof can be of matched lumber, or rough boards battened. Almost any farmer is enough of a mechanic to construct such a shelter, and it will be found serviceable as well as neat in appearance. It often happens that those who have upon their premises the most improved barns and other outbuildings, desire to feed for a few months an extra number of sheep or cattle, but have not sufficient convenient shelter. This may be provided by a temporary addition to a large building, as in fig. 4, in which *L* is a post set in the ground. *B*, board roof, and *D* a post of main building. This structure can occupy the end or side of a building, as may be most convenient, and can be so arranged that hay and grain may be fed direct from the large building without passing out of doors. The only trouble with structures of this kind is, that farmers find them so convenient, that they are tempted to let them remain for years, and they become permanent instead of temporary. Unless they are constructed of a material, and in a manner not to detract from the appearance of larger structures,

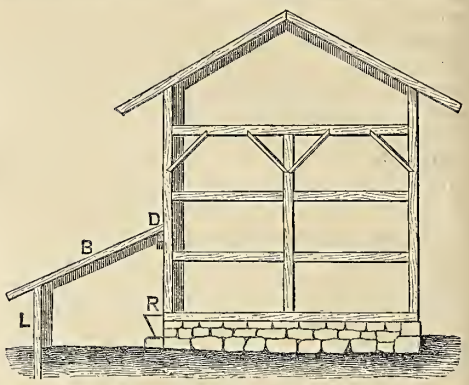


Fig. 4.—SHELTER ADDED TO BARN.

they should be removed as soon as they have served the immediate purpose for which they were erected.

Movable Nests for Hens.

Hens, as a general thing, are remarkably self-willed and obstinate. Perhaps an exception may be made as regards the Brahmas, which are very docile and easily managed. On account of this general peculiarity of fowls, many people who possess a somewhat similar disposition, find no success in keeping them. Their hens will not lay in the nests provided for them, or after sitting a few days upon a nest of eggs, leave them and never return. The consequences are, either no eggs at all, or nests hidden where they can not be reached; no chickens, and time and labor lost. This may all be avoided if the owners will only study the habits and instincts of their poultry reasonably. One of the most inveterate habits of hens, is that of hiding their nests or seeking them in retired shaded places. Those who would have plenty of eggs, must make their arrangements accordingly. A very cheap and convenient nest is shown in the accompanying illustration. It is made of pieces of board eighteen inches long, nailed endwise to three-sided cleats at the top and bottom. The box need not be more than eighteen or twenty inches in length. Some corner pieces are nailed at the front to make it firm, and the back should be closed. These nests may be placed in secluded corners, behind sheds, or beneath bushes in the back yard, or behind a barrel or a bundle of straw. The nest egg should be of glass or porcelain, and every evening the eggs that have been laid during the day should be removed. A little cut straw mixed with clean earth or sand, will make the best material for the nest. This

A MOVABLE HEN'S NEST.

should be renewed occasionally, for the sake of cleanliness. When a hen has taken possession of one of these nests, it may be removed at night to the hatching house, without disturbing her. Before the nests are used, they should be thoroughly well lime-washed around the joints, to keep away lice.

Fastenings for Cows.

Although stanchions are really the safest fastening for cows, yet some persons object to them because the animals are held in a too confined position, and one which is supposed to be painful, or otherwise objectionable to the cows. Most owners of valuable cows consider safety to be the first requisite in their management, and the question as to what the cow would like as of minor importance. Stanchions have the valuable recommendation that one always finds his cows in the morning just where they were left at night, if they have been properly secured. Nevertheless, for those who dislike stanchions, there are other safe ways of fastening cows. For some years we used the method shown in figures 1 and 2. In the first a strong smooth pole was inserted through the floor and "stepped" into the beam beneath and into the floor above. It was also fastened by an iron strap bolted through the front of the trough. A steel ring to which a steel chain was attached was made to slide up and down upon the post, and a leather neck strap, or, in some cases, a leather head stall was attached to the chain by a suitable ring or loop. The ring could

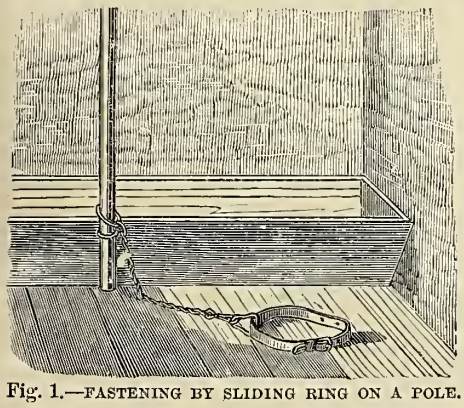


Fig. 1.—FASTENING BY SLIDING RING ON A POLE.

not fall so low as the floor, being held by the edge of the feed trough, and the cow's feet could not, therefore, be entangled in the chain by getting over it. This is the chief danger in the use of neck straps and chains, but it may be avoided in this way. Another plan is to have an iron rod bolted to the feed trough, upon which the ring may slide. This is equally secure, and gives more room for movement to the cow. With these ring-ties it is best to have short stalls to prevent the cows inter-

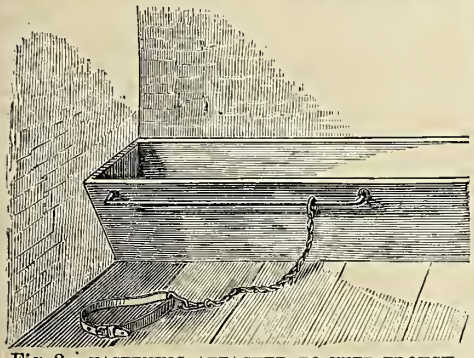
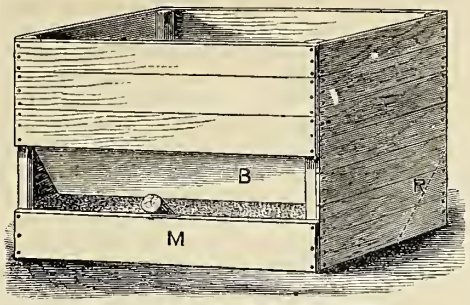


Fig. 2.—FASTENING ATTACHED TO FEED-TROUGH.

fering with each other, else one of them may step on to another as it is lying down. The teats are sometimes injured even when stanchions are used, but the danger of this is greater with chain ties.

A Convenient Bin for Oats.

The usual receptable for oats, corn, or mill feed, or other grain for domestic animals, is a common bin or box about four feet in hight. It is difficult to get the grain out of such a place when the quantity is half or more exhausted. To obviate this inconvenience, there may be affixed, about one foot from the bottom on one side of the bin, a board (*B*). This is nailed so as to project into the bin at an angle sufficient to allow the filling of a measure between the lower edge of board B and top edge of the opening at *M*. The opposite lower side of the bin is covered with boards, as indicated by the dotted line at *R*, for the purpose of placing the contents within easy reach. The top can be com-



A BIN FOR OATS OR OTHER FEED.

pleted with hinged cover as well as the delivery space. By using a bin of this form, the last bushel is as easily removed as the first one.

Hints for the Workshop.

How to drive a horse-shoe nail.—Most farmers hesitate to attempt to fasten on a loose shoe for fear of injuring the foot by driving the nail in a wrong direction. It is such a saving of time and money to be able to put a shoe upon a horse in a hurried busy time, that every farmer ought to learn how to do it. He may practice upon a piece of soft pine wood in a rough way, when he will find how easy it is, by properly preparing the nails, to make the point come out in exactly the proper place. To prepare the nail it should be laid upon the anvil (which every workshop should have for such work as this), or a smooth iron block, and beaten out straight; the point should then be beveled slightly upon one of the *flat* sides, and the point also bent a very little *from* the side which is beveled. It will then be of the shape shown at figure 1. In driving such a nail into a piece of soft wood, or a horse's hoof which is penetrated easily in any direction, if the beveled side is placed *towards the center* of the hoof and away from the crust, the point will be bent outward, and will come out lower or higher on the crust as the bevel and curve may be more or less. A little practice will enable one to cause the point to protrude precisely at the right place. By turning the bevel *outwards*, in driving the nail, the course will be towards the center of the foot as shown by the line *b*, in figure 2. The nail is sometimes started in the wrong direction by careless blacksmiths, and the horse is lamed in consequence. If the mistake is discovered, and an attempt made to draw out the nail, a piece of it may be broken off, and at every concussion of the foot, the fragment will penetrate further, until it reaches the sensitive parts, and great suffering will follow. Many a horse is supposed to have navicular disease, (because that happens to be one of those obscure affections of the foot which has no outward sign,) when the trouble is a fragment of nail broken off by a bungling shoer. We have examined the foot of a horse which was killed because of an incurable lameness, and found a piece of a nail thus bedded in the center of the foot, surrounded with an abscess which had eaten into the bone. The torture suffered by this horse must have been intense, and it was supposed to be a case of navicular disease, while the real cause was unsuspected. In driving nails into the hoof great caution should be exercised. The hand, or the thumb, should be held over the spot where the point of the nail is expected to come out, and if it does not appear when it should do so, the nail must be withdrawn. Use no split or imperfect nail, and have the point very carefully prepared. The course taken by a nail properly pointed and driven, is shown by the lines curved outwards at *a*, *a*, in fig. 2.

Fig. 1. NAIL.

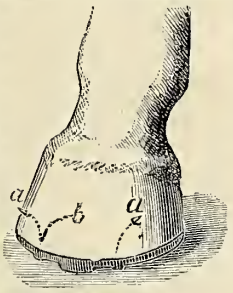


Fig. 2.—DRIVING NAILS.

Screw-Drivers.—To drive a screw with a screw-driver, as it is usually pointed and handled, is a disagreeable task. If the screw goes in with difficulty, the driver slips out of the groove, or it cuts the edges of the groove so that the screw is useless. This is because the point of the tool is not ground properly. It should be ground with an even and long bevel, at least an inch long in small tools, and two inches in large ones. The sides of the bit should be kept straight, and not tapered off nor the corners ground off or rounded. There should be no sharp edge ground upon the end of the tool, and the grinding should be lengthwise, or from handle to point, and not cross-wise. The edge should be slightly rounded. The degree of roundness given may be such as would make it equal to an arc of a circle ten to twelve inches in diameter; for small tools this may be lessened considerably. The shape of a well pointed screw-driver is shown at figure 3. Flat handles should be abolished as a nuisance; after an hour's use of a driver with such a handle, the hand will be stiff and sore. The handle should be a round one, as shown in figure 4, and it will pay every one who uses the tool to provide one without delay. Screw-drivers are used more frequently than necessary. We have driven hundreds of screws in all sorts of timber, hard white oak even, with the hammer, just as nails are driven, without the use of a screw-driver, and found them hold perfectly well. This, of course, can be done only with the sharp taper-pointed screws, and if any one uses the old blunt pointed kind, he is too far behind the times to be much of a mechanic or farmer either.

Fig. 3. SCREW-DRIVER.

To Prevent Cows Sucking Themselves.

In the *American Agriculturist* for November last, two devices are given to prevent cows from sucking themselves; a correspondent thinks his contrivance of a spiked leather halter quite as effective, and attended with less expense and trouble. The manner of wearing the halter is shown in figure 1, one buckle at the upper part, behind the ears, makes it quite easy to attach or detach it. Figure 2 shows how the spikes are secured. The spikes should not be over two inches in length. They are best made of wrought nails, which are sold at the hardware stores. They are placed in an iron vise and the heads flattened as much as possible by pounding with a hammer; they are then driven into a piece of thick leather, and secured by sewing or riveting it upon another piece of leather, as shown at *B* in figure 2.

Fig. 1.—SPIKED HALTER.

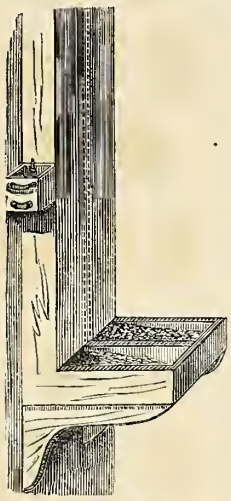
Fig. 2. MAKING THE HALTER.

Navicular Disease in Horses.—That this disease is prevalent, is a serious reflection upon the wisdom of owners of horses. When a horse is shod the frog is cut away and the sole pared, and that portion of the foot which should act as an elastic cushion or spring to the bones of the foot, is re-

moved. In working upon hard roads the feet are jarred, and the blows come upon the bone which bears the whole weight of the quarter of the horse. The membrane which surrounds this bone is inflamed, and the horse shrinks when the foot is put on to the ground. The cure is hopeless, because the seat of the disease cannot be reached. The only hope is in rest and cooling physic. To prevent this disease, the frog and sole should be kept in their natural condition, and high heel caulks should be avoided. The Goodenough shoe properly fitted is a sure preventive of it.

A Spout for a Grain or Other Bin.

The safest place for grain or feed is on the floor above the stable. When stored there, no loose animal can get access to it and gorge itself dangerously, and more space is left in the feed-room. If the bin or bins are on the upper floor, the supply may still be drawn on the lower floor by using the spout here described. This may be connected with several bins by making divisions in it, and providing separate receptacles below. The feed or grain from the bins above rests in the reservoir below, which is always partly full, but can never overflow. From this it can be measured out by means of the measuring box, described in the *American Agriculturist* for January last, p. 16; this holds $3^3/_{10}$ quarts or $4^1/_2$ pounds, which is an ordinary feed. This box may be hung upon the spout as shown in the engraving. Such arrangements as this cost but little, but save much room, add much to the neatness and convenience of the stable or barns, and are very economical in use.



GRAIN SPOUT.

Over-feeding Fine Stock for Show.

BY A. B. ALLEN.

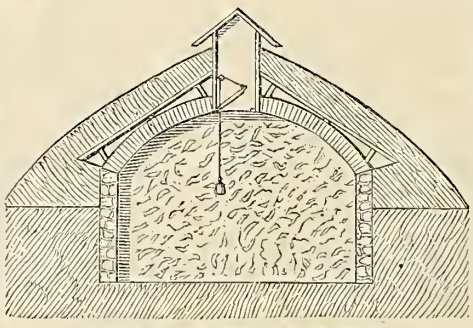
It is astonishing that breeders will be so foolish as to still continue the practice of stuffing, to their utter ruin, valuable animals from their flocks and herds, simply for the purpose of outshowing each other in monstrous fat at the Agricultural Fairs. See, for example, what destruction has resulted for years past from this cause in the noble tribes of Bates' and Booth's Short-horn cattle. It is not surprising that many have died under this practice; the only wonder is that a single animal of them has survived it, and is still left with sufficient stamina to propagate its species. In a late issue, the London *Agricultural Gazette* observes that this lamentable destruction is going on in other superior families of Short-horns, and also in other breeds of cattle, for it says: "Mr. Outhwaite has lost his celebrated cow Vivaudière. She and her calf have both died during protracted labor. The North British Agriculturist of last week enumerates the disasters which have of late befallen prize animals. Among them, Mr. Kennard's Queen Mary, which has lost her calf; Mr. A. H. Browne's Duke of Aosta, winner of many prizes, including the first at each of the three national meetings in England, Scotland, and Ireland, last season; Lady Pigot's Victoria Victrix, Rose of Wytham, and Moorish Captive, all of them 'Royal' winners; the Duke of Buccleuch's prize winning Ayrshire cow; and Mr. Scott's fine polled Angus bull, Bluebeard. We rather suspect, says the Gazette, that the unnatural state of feeding in which show-yard animals now-a-days appear, has had not a little to do with the death of some, if not all the animals particularized."

Yes, indeed, you may "rather" more than "suspect" this, for it is a terrible fact, and no mistake about it. I well recollect when present at one of the Royal Agricultural Cattle Shows in England, of expressing astonishment to a celebrated breeder there, that he should sell a lot of his prize animals to a competitor. "Why," I exclaimed, "in a few years he will be exhibiting here against you, and beat you with the produce of your own weapons." He gave me a nudge with his hand and a sly wink from his eye, and at the same time drily remarked: "Never fear that. These animals have been fed too high to make good breeders; the purchaser of them can never beat me at a cattle show with their offspring."

And, still, with such a lesson before us, we Americans are so foolish as to continue importing prize stock from abroad, and boast of it to the public, thinking thereby to be able to sell their produce at a much higher price, than such as come from animals that have not gone through the injurious process of over-feeding, in order to make a foolish show of their fine points.

A Frost Proof or Cool Cellar.

A correspondent proposes to build a cellar, separate from other buildings, which shall be frost proof in winter and cool in summer, and that will be also well ventilated. He proposes to excavate four feet deep for the cellar, build the walls of stone, with an arched roof of brick, covering the arch with four feet of earth, and sod over the earth; in the center of the roof he would place a well with a glazed sash at the top and bottom for the purposes of light and ventilation. He asks how we would modify or improve this. We suggest that in order for such a cellar to retain an even temperature in winter and summer, there ought to be some other protection than the covering of earth, such as is suggested in the accompanying engraving. This shows an air space between the arch and the covering of earth, which might be made by laying three scantlings or joists lengthwise of the roof and covering them with boards, and battens to close the joints. There would then be a non-conducting air space of several inches which would prevent the roof from becoming sufficiently cool to cause a frost deposite upon the inside of the cellar in extremely cold weather, which is not at all unusual. The moisture would then be deposited upon the boards instead of the ceiling of the cellar. To remove the dampness thus gathered upon the boards, the gable ends of the cellar should have ventilators opening into this air space at both the front and the rear; these could be opened in the summer time, and cause a draft of air through it. This would tend greatly to cool the roof in hot weather as well as remove the dampness in the space and prevent the

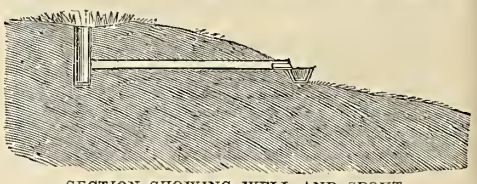


FROST PROOF CELLAR—SECTION.

boards from decaying. The lower sash in the well should be hinged at one side so that it can be raised by means of a cord and pulley and a weight, as shown in the engraving. The ventilators in the upper part of the well might be made in the front and rear, so that one or the other could be opened from without when needed. This will prevent dust from blowing in during windy weather, as the opening on the windward side can be closed at such times. For summer use a covering should be placed over the upper sash to exclude the sun's rays, which will materially raise the temperature within the cellar. Such a cellar as this would operate very well for a dairy, and make unnecessary the use of ice, with its accompanying dampness and sloppiness, to say nothing of the cost and labor.

Water on Prairie Farms.

One of the frequent inconveniences of a prairie farm is the lack of a permanent supply of water for the stock; a want which causes the loss of millions of dollars yearly through diseases and deaths of animals. Bad water, such as is necessarily contained in ponds and sloughs to which stock have access in summer, is dangerous in itself, but when it is rendered impure by the evacuations of sick animals, it is still worse, and will communicate disease to any healthy animal that may drink of it. Such water has really become a deadly poison, which will infect any stream into which it may happen to overflow at a rainy time, and thus carry its deleterious matter to many other farms. There can be hardly a doubt that the origin of splenic fever, black-leg, and hog cholera, in some western localities, is due to the use of unwholesome water, and their rapid spread to the poisoning of the ponds and streams by the droppings of the stricken animals. The water of sloughs is in many places the entire dependence of western farmers, and many eastern farmers depend in part upon pond water. If some means were provided for keeping this water pure by removing it from the reach of all unwholesome influences, and supplying it to the stock in such a way that they could neither foul it nor waste it, much good might be done. A correspondent, W. B. Parkyn, of Cedar Rapids, Iowa, sends us his method of doing this, which seems to be well worthy of consideration. He says: "Last August,



SECTION SHOWING WELL AND SPOUT.

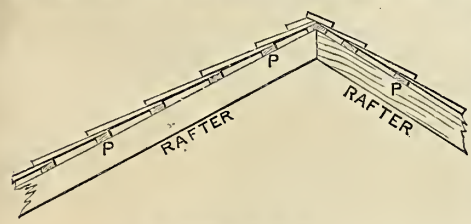
during a dry spell, my well in the pasture got very low, and I had to contrive some plan to furnish more water for the stock; I went to the head of a slough above the pasture, dug a well, and a ditch from the bottom of it out in the pasture. The well in the meadow is six rods above the pasture. I dug the well and ditch at the same time, so that the water would run off and not obstruct the digging; the well is 8 feet deep; ditch 12 rods long; the well is a foot deeper than the upper end of the ditch, which I dug as narrow as possible, and yet work in it. The well is curbed up with the best pine fencing. The curbing is one foot above the surface, so that dirt cannot wash into it. The pipe, or spouting, leading from the well down the ditch into a large trough in the pasture, is made of the same quality of fencing, ripped into pieces 2 and 4 inches wide, which makes a spout 2 inches square on the inside. The pieces of spouting are 16 feet long, the ends are mitered together and fastened with white lead. A small piece of board is imbedded in the mud under each joint. After the spouting was all completed, and the water running a steady stream (faster than one cow could drink), I filled up the ditch by the use of a team and scraper, scattered some grass seed on the earth, put a tight platform on the well, and the job was completed with about one week's work of my own hands. This was done in August, 1875, and I have not pumped a stroke for my stock in the pasture since, but there has been a continuous stream running all the time in the trough. The trough is about one foot below the surface of the ground, I think this is better on account of not freezing. The ground on the east side of the trough is scraped out so the cattle have easy access to the water. A shallow ditch carries the water off from the lower end of the trough, I consider this the best improvement I ever made on my farm. I think I can safely say that more stock in my neighborhood has been lost by getting into open slough wells, than would pay for such a water supply as this on every farm around here."

To Sharpen Posts or Rails Conveniently.

A good manager will so provide and arrange the work that there will be no season of leisure upon the farm. Preparing fencing material is useful work for winter, or that portion of a northern spring that is more unfavorable for many operations than winter itself. The sharpening of posts and stakes is a laborious task, and a simple method for holding them, as is here described, will be a great convenience. First procure a block of wood three or four feet in length, a foot in width, and four or more inches in thickness, in the center of one side of which make a cavity one inch deep and eight or nine inches wide with an ax. When a post is to be sharpened, place one of its ends in the crotch of a tree and the other resting in the cavity of the block, which is placed near the tree. The method of doing this is shown in the illustration, page 140. In the absence of a tree, a crotched stick can be driven into the ground, or two stakes so arranged as to form a substitute, as seen in the engraving. During inclement weather the work may be done in a shed or barn, and by using the block, there will be no danger of cutting the floor.

Skeleton Roofing.

The subject of roofing is one of great importance to every farmer who has many out-buildings, and the hints here given by a correspondent will be of use to many. The accompanying sketch shows a shingled roof in which cheapness and durability are combined. In the common shingle roof the

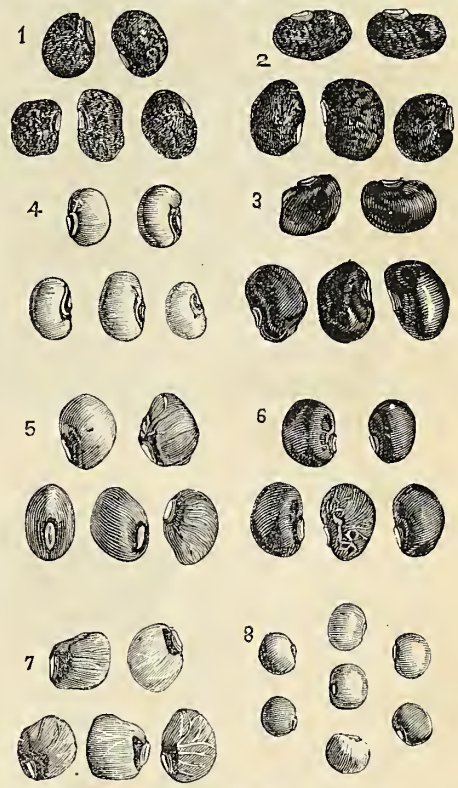


SECTION OF ROOF.

rafters are wholly covered with boards, to the upper surface of which the shingles are nailed; by the plan here shown, strips inch thick, and 3 or 3½ inches wide, placed at that distance apart to receive each course of shingle nails. The strips are designated by the letter *P, P, P, P,* in the figure. This is indeed a skeleton roof, and it is evidently cheaper than when wholly covered, and will dry out more readily when wet, and is therefore more durable.

The Southern "Cow Pea."

A few years ago we saw at a fair in a southern state, a bag of seeds of unfamiliar appearance, and asked our companion what kind of beans those were. "Those are not beans," was the reply, "but Cow Peas, our great forage plant."—We insisted that whatever else they might be, they were not *peas* in a botanical sense, but the exhibitor of the seeds, overhearing the conversation, set the matter at rest—at least to his own satisfaction—by asserting, "I *know* them's *peas*, for I raised 'em myself."—This was our first acquaintance with the cow-pea or field pea of which we had heard and read so much. It is a crop of great value in all the southern states; if one asks a southern planter if he has tried clover, he will most likely be told that there is no need of trying it, as they have in this pea a perfect substitute, and claim that it is in every respect superior to clover, whether for fodder or as a green manure crop. Upon inquiry as to what the plant was, or where it came from, we have not been able to get anything more definite than it is "the common pea of the country."—The writers in southern agricultural papers speak of it as a species or variety of the pea proper, and in looking up the matter in all the available works, we found but few instances in which any hint is given that the writer considered the plant essentially different from the garden and field pea of Europe and the northern states. In one case, Edmund Ruffin, a distinguished Virginia agriculturist, in an address at Charleston, S. C., mentioned it as "The native Southern Pea (cow pea)," and in Emerson's Farmers' Encyclopædia, under "Cow Pea," it is twice referred to as a variety of the "Indian Pea," but as the Indian pea is not given in the work, we are left in doubt whether the writer meant American Indian, or East Indian. In his excellent "Resources of the Southern Fields and Forests," Dr. F. Pyre Porcher, Charleston, S. C., says under Cow Pea, that he thinks it may be a Vetch (*Vicia*), but it is quite as far from this as from the true pea (*Pisum*), While there were abundant accounts giving the uses and value of the plant, and its cultivation, we could find nothing which told what this widely distributed and very common plant was. As the visit to the south referred to, was after the crops had been harvested, we could find no growing plants, and we had to wait until we could cultivate them ourselves. Knowing that there were several varieties of the Cow Pea, we endeavored to procure as many as possible; through the friendly aid of P. J. Berckmans, Esq., Col. J. M. Stubbs, M. W. Johnson, Esq., (Seedsman, Atlanta), and the editor of the Southern Cultivator (Athens), all of Georgia; H. B. Shaw, Esq., Louisiana; A. J. Wright, Esq., Miss., and Dr. J. A. Anderson, of Tenn., we received some 30 named samples, of which 20, in the color, size, and shape of the seeds, were distinct. These were sown in rows in the garden the same as bush beans; not knowing that the plants spread, some of them covering an area of several feet, it was found when too late, that they were much too close, and the fall being wet, they grew into a tangled thicket; some ripened a few pods, and others none, there being a marked difference in their earliness. In habit some were quite bushy, while others made long, and even twining branches running 4 to 6 feet. The leaves in all are of three leaflets differing greatly in size and shape, some being oval, others broadly ovate or rhomboid; the downiness of the plants also varies. The flowers are few, at the end of a long stalk; they have somewhat the shape of those of the bean, but that part called the keel is not twisted as in that; the color varies from yellowish or cream color to light purple. The pods from 3 to 8 inches long, narrow, mostly straight; in some only two on a stalk, and in others three or four. In the seeds themselves are to be found the greatest differences in size, shape, color, and markings, some of the most distinct of these kinds are shown in the engravings, which gives size and shape, though but little idea of color. We have classified our 20 varieties according to their color and markings, and make the following groups in each, naming the largest variety first. (1.) Seeds cream color, with a minute olive-green line at the eye; White Table (also Mush and Dennis' Field), Lady, Six-oaks Field. (2.) Cream-colored, with a brownish stain at the eye; Red-hulled White, Sugar Crowder, White Crowder, (both nearly globular), Brown-eye, White Field. (3.) The same, but with a distinct black eye. White Crowder (different from the one above named), Black-eyed White. (4.) Drab, usually darker at the eye. Clay-bank, Joiner's Long-pod. (5.) Yellowish-brown, with a minute dark line at the eye. Yellow Crowder, Yellow Cow. (6.) Purplish-brown, or reddish-chocolate color, with dark line at the eye. Red Ripper, (also Tory), Breack, Red Cow. (7.) Yellowish or purplish-brown, mottled with very dark brown or black, especially towards the eye; Speckled Java (also Early Bush), Whippoorwill (also Speckled ditto, and Shiny), (8) Jet Black, with a small white scar; Black Field. A careful examination showed that the plants belong to the genus *Dolichos*, and into that section of it that recent botanists place in a separate genus, *Vigna;* but could they be all of one species? Comparing these varieties with the many forms of the garden bean (*Phaseolus vulgaris*), the differences among the cow-peas are no greater than are shown by the various forms of that. Which species to refer them to was not an easy matter, but they agreed best with *D. Catjang*, as described in Lourerios' Flora of Cochin China, of which several forms with native names have been cultivated in that country, and in China, from very early times. Knowing that his immense herbarium and extensive library would throw some light on the matter, we sent several specimens to Prof. Gray, who informs us that they agree with the old *D. Sinensis* of Linn, which is the same plant Lourerio has as *D. Catjang*. We are, then, no doubt safe in considering all the forms of the cow-pea as *Dolichos Sinensis*, of the older authors, but more properly, according to later botanists, *Vigna Sinensis*. We mention these details to show how difficult it sometimes is to get at the botanical name of a cultivated plant. We sent to Dr. Gray after we supposed that we had exhausted every source of information at hand, but before his reply came, we happened to think that the industrious Mr. White, in his "Gardening for the South," might say something about the plant, and on consulting this we



VARIETIES OF SOUTHERN COW PEAS.

1. Whippoorwill.—2. Speckled Java.—3. Black Field.—4. Six-Oaks Field.—5. Sugar Crowder.—6. Tory, or Red Ripper.—7. White Crowder.—8. No name received.

found that he refers cow-pea to *Dolichos*, though he gets the species wrong, and he is only one who, so far as we are aware, gives even a hint towards the name of the genus. Related plants, often cultivated, are the Hyacinth Bean, a climber with large purple clusters of flowers *Dolichos Lablab*, and the Asparagus, or Yard-long Bean, which is *Dolichos*—or more properly *Vigna sesquipedalis*, a good pole snap bean if used when young. The name *Dolichos* is the Greek word for elongated, given to some tall climbing bean, and *Vigna* is in honor of an Italian of that name who wrote about plants early in the 17th century. Cow-pea is an unfortunate name, as the plant in its botanical relations is much nearer a bean than a pea, but such common names when once established are sure to hold. The character of the foliage, the absence of tendrils, the shape of the seeds, and especially the fact that the seed-leaves appear above ground in germinating, all widely separate it from the pea and ally it to the bean. An article upon the cultivation of this interesting and important plant by a southern cultivator is promised for another month.

The Oyster-shell Bark-Louse.—Prof. S. V. Rathvon, reports in his paper, the Lancaster Farmer, that he has seen the late Mr. Walsh's remedy for this troublesome insect used with excellent success. It consists in simply applying neat's-foot, lard, or other non-drying oil, to the portions of the tree infested by the louse. It is put on with a brush, just before the buds expand, without injury to the tree, and to the complete destruction of the insects.

The Wild Balsam Apple or Cucumber.

In November last, Mrs. Rochester, in her "Home Topics," mentioned the Wild Cucumber, more generally known as the Wild Balsam Apple, as a desirable climber, and we added to her account of it a word of commendation of our own. Of late years many exotic ornamental climbers have been introduced, and while some of them may be more showy, none are more interesting than this native. Though often called Wild Cucumber, it is not much like the cucumber; it belongs, however, to the same family, but differs in its manner of flowering and in its fruit from the squash, melon, cucumber, and other common plants of the family. The botanical name is *Echinocystis lobata*, the generic name being from the Greek for hedgehog, and bladder, as its fruit is bladdery and prickly, and the specific name has reference to the lobes of the leaves. It is found from the western part of New England to Missouri, mostly in the northern states. It is an annual, climbing 10 or 15 ft. high, by means of its long and abundant three-forked tendrils. The nearly smooth leaves are 3 to 5 inches across, and with five sharp lobes. The flowers are of two kinds in the same plant; the sterile, or staminate flowers are in compound clusters, often a foot long, from the axils of the leaves; the individual flowers small and white, of six narrow petals united at the base, and three united stamens. The pistillate or fertile flowers are solitary, or two or three together from the same axils. The engraving on the opposite page gives a small portion of the plant, though much reduced in size. The fruit is oval, or nearly globular, and about two inches long, and has on its surface numerous weak prickles. When ripe, it bursts at the top, the rind breaking open irregularly, to liberate the seeds, of which there are four large, blackish, and about the size of watermelon, seeds, though thicker. The seeds are contained in pairs in two oblong cells formed of fibres woven into a handsome net-work. Like the sponge cucumber, the fruit of this in ripening becomes very fibrous within, and makes a fine object when skeletonized. This is a capital plant wherever a quick growing climber is needed; in a note to Mrs. R.'s article, we cited an instance in which an unsightly wood-pile was converted into a bank of verdure; and last autumn we were at a charming residence near Lake Michigan where the dining-room windows were draped with this plant, the light in coming through its foliage was modified in a pleasing manner. The plant is almost constantly in flower, and its fragrance is very agreeable; the great abundance of tendrils and the curious ways in which they dispose themselves, add to the gracefulness of the vine, while the fruit is ornamental when green, and exhibits an interesting structure when ripe. Though it is occasionally seen in cultivation, it is comparatively little known. Were it an exotic, and sold at five seeds for a dollar, it would at once be immensely popular, but being a native it is neglected. In looking through the leading catalogues to ascertain if the seeds were generally kept, we could find that none of the seedsmen, except those in Rochester, offered them.

METHOD OF SHARPENING POSTS OR RAILS.—(*See page* 139.)

Gardening on a Town Lot.

BY A. B. MITCHELL.

American Agriculturist: The following is the result of my second year's experience in gardening. I am a dry goods merchant, having a town lot, 120 x 60 feet, half of which is covered by a house and out-buildings; the other half I have cultivated out of business hours. The area under cultivation is about one-twelfth of an acre. Of the first crop, consisting of peas, cauliflowers, cucumbers, and cabbages, I sold $5.60 worth. I had the first green corn in market, which sold at 25 cents per dozen. Of peppers I sold 42¼ dozen at 10 cents per dozen, amounting to $4.25. Of ripe tomatoes, 15 bushels were sold at $1 a bushel, $15; and of green tomatoes, 4 bushels at 75 cents, $3. Here I should mention that a summer freshet had ruined many of the market gardens, which enabled me to sell at good prices. The varieties of tomato were the Trophy and Champion, both of which I consider good, but prefer the Trophy. Egg-plant, Lima-beans, pop-corn, and sweet herbs, I raised in abundance for family use, but did not sell any. As a second crop, I put in twelve hundred celery plants raised from seed, from which the sales realized $45.11. The variety was Sandringham Dwarf White; I consider this variety superior for market purposes. The giant variety was raised here by other parties, but was left unsold at the groceries day after day, while mine was sought for. I banked about one-third, and the balance I put in trenches about the first of November. The total amount of sales to date is $72.96, besides which I have on hand about $3 worth of parsnips. I commenced cultivating the garden solely to raise vegetables for family use. We used of all the vegetables in abundance in the family, and gave away largely to neighbors; what I sold was the surplus. The work was done entirely by myself out of business hours. I am only an amateur gardener, and attribute my success firstly to the *American Agriculturist*, and to Peter Henderson's "Gardening for Profit," and secondly to thorough cultivation. My motto being never to let a weed germinate. I consider the garden has saved in vegetables that would have been purchased, at the lowest estimate, $40. I have on hand parsnips, $3; these added to cash sales ($72.96), make a total amount of $115.96. I think I have some reason to be proud of my success.

Delphi, Ind., Dec. 27, 1875.

[We receive every now and then accounts of the success of persons in gardening upon a small scale, and while we are not able to publish all of them, they are always welcome. The above, giving the results of gardening on a very limited area is timely, as it may encourage many others. Very few persons have any idea, until they try it, how much, by proper management, may be grown upon a small piece of land. There is nothing scarcer in villages and towns of moderate size than good vegetables, and in such places a surplus finds a ready sale, and at prices much above those received by those who cultivate for the larger markets.—Ed.]

The Clerodendrons.

The genus *Clerodendron* is a common one in Asia, Africa, and tropical America, and many of its species have been brought into cultivation. It belongs to the Verbena family, and the plants generally have showy flowers. Among the cultivated species are both bushy and climbing forms; one of the former, *Clerodendron Bungei*, is a favorite garden plant in the southern states, where it produces abundant large clusters of rose-colored flowers. Among the climbing

MRS. THOMPSON'S CLERODENDRON (var. *Balfouriana*).

species several are valued as showy plants to run along the rafters or around the pillars of hot-houses; none of these are more interesting than Mrs. Thompson's Clerodendron (*C. Thompsonæ*). It comes from Old Calabar, on the west coast of Africa. A live plant of it was sent to Edinburgh in a wardian case, fifteen years ago; it blossomed in the Botanic Garden there, and was named by Prof. Balfour, in memory of Mrs. Thompson, of the Scotch Presbyterian Mission to that unhealthy coast. A seedling from it, raised in England, has rather larger flowers, and is the one most generally cultivated under the name of *C. Balfouriana*, and is now generally kept by our florists. Though the English writers rank it as a stove plant, we find it blooms freely in an ordinary greenhouse, and though naturally a climber, it may, by occasionally pinching in the branches, be made to grow as a compact bush, and as it flowers freely, it is one of the most desirable greenhouse plants. We were so much pleased with it that we had an engraving made of it when it was first introduced, which comes in play now to illustrate Prof. Gray's article on fertilization. But few flowers present such strong contrasts of color; its large bag-like calyx is pure white, and appears itself like a corolla; after a while the proper corolla, which is much smaller, protrudes beyond the calyx and is of a fine blood-red or vermilion color, which shows brightly against the white calyx. The plant may be had in bloom at almost any time, by drying it off to give it a season of rest, and then bringing it into growth by means of water and heat. The red corollas do not hold on well after the flowers are cut, but this does not prevent its being very useful to florists, who make use of the calyxes as white flowers. The plant is readily propagated from cuttings.

GOLDEN COLEUS, "THE SHAH."

WILD BALSAM APPLE, OR WILD CUCUMBER.

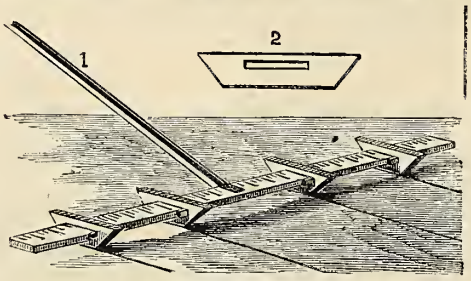
The Coleus as a Specimen Plant.

Some persons are singularly exacting in regard to plants, and expect to find all the good qualities of all plants concentrated in one. Show such persons the most beautifully formed and brilliantly colored flower, and without admiring it, they will put it to the nose and immediately inform you that it has no smell. If the flower is both bright and fragrant, they will then rub the leaves between thumb and finger, expecting these to be fragrant also. Show such your most elaborate specimen of bedding, in which coleus and achyranthes in variety are contrasted with cinerarias, and other "foliage plants," from which the flower-buds have been carefully picked, and instead of admiring the color effects, they ask when the plants will bloom, and what kind of flowers they have, and if told that such plants will not live through the winter in the open air, they at once lose all interest in them. But few who have gardens have not been visited by these unreasonable mortals, who never enjoy a plant for what it is, in looking for some quality it has not. The Coleus would no doubt be raised in the esteem of such persons did they know that while all of the varieties bloom, the flowers in some of them are quite pleasing. In using these for bedding effects, they must be kept within bounds by cutting back, and their flowers, could they be produced under this treatment, would not be desirable here. Those who have seen the Coleus grown in masses only, where the form of the individual plants is not regarded, the effect of a mass of color being the only object, have no idea of its appearance when grown as single specimens. The plants grow with great regularity, the branches coming off from the square stem in regular pairs, each pair at right angles to the next, and naturally assume a symmetrical form; by the aid of a little pinching and training, a perfect pyramid, two or three feet high, of the richest colored foliage may be formed, that will be well worth the slight trouble to produce it. Unfortunately the Coleus is not well suited to window culture; it is impatient of changes of temperature, which are very frequent in the dwelling house; besides this they require a moister atmosphere than can usually be commanded in such situations. As a decoration for a greenhouse or conservatory, a well grown specimen of Coleus of good variety is very showy, and such plants may be used to decorate a room on special occasions with good effect. The full beauty of most of the finer varieties, in which the leaves are marked or edged with different colors, is only displayed by plants grown in the greenhouse; in the open ground, the hot sun soon causes the leaves to lose their markings and the various colors blend into one uniform tint. One of the most distinct of all the varieties is "The Shah," in which the leaf is divided crosswise into two sections with distinct colors, the upper portion being golden yellow, and the lower part, or base, a rich crimson, the line between the two being well marked. These colors are not often shown by small plants, but when the specimen gets strong, they become very striking. A large plant of this variety was one of the most attractive things in our greenhouse the past winter. This plant at

length showed flower-buds; as it was kept only to use later for cuttings, no pains were taken to remove them, and it soon came into full bloom, making a still finer show. The flowers of the common velvet or Verschaffelt's Coleus are very small and dull colored, as are those of other varieties, and not desirable; the flowers of "The Shah" are of a light bluish purple, and though small, are large enough and abundant enough upon the long, slender spike to make that quite attractive, and the flowering in this case, instead of disfiguring the plant, as with some other varieties, really adds to its beauty. Those who have no greenhouse, can grow specimen plants in summer in the open air with much satisfaction, and they may be made fine ornaments for a balcony or veranda. There is besides another use for which they may be grown—for exhibition at the autumn fairs. At most of the local fairs the "Floral Hall" is sadly lacking in attractiveness; the flower growers of the vicinity send in their contributions of cut flowers, but there is rarely anything that will make an effective display. We know of nothing that will make a brilliant show that can be grown with so little trouble as a few specimen plants of Coleus. It will not do to grow them in the open ground and then pot them, but they must be grown in the pots or boxes in which they are to be exhibited. They should have a rich soil, and if it is disposed to become hard, enough sand must be added to keep it porous; cuttings root with the greatest ease, and the plant is very manageable in the hands of the cultivator. In forming a pyramid it may be necessary to tie out the lower branches to nearly a horizontal position, and the upper must not be allowed to overhang the lower ones; pinching out the ends of the branches where necessary, will control the growth as may be desired. Of course care must be given to watering, and partial shade will be needed in the hot months, especially for those with marked leaves. The varieties are numerous, and new ones are offered every year; the florists divide them into golden and velvet sorts, the one containing more or less yellow in their foliage, and the other being dark crimson and purple; none that we have seen rival "The Shah" in brilliancy, while for rich blending of shades, "Chameleon" is the finest; "Vietchii" has very dark maroon leaves with green edges, while the "Verschaffeltii," the oldest of all, has not been surpassed as a crimson. For others, see florists' catalogues.

A Handy Garden Marker.

Markers for use in the garden, are among the implements that are home-made; in a rough way, pins are set in a piece of joist, and this, when furnished with a handle, answers a good purpose. Those who like to have their garden implements neatly made, will be glad of the following description, sent us by Mr. D. S. Hibbard, of Carroll Co., N. H., of a marker which is unlike any we have before figured, and which has the advantage of being readily adjustable to make drills at any required distance apart. He says: "Plane a piece of inch-board, 4 inches wide, and from 4 to 6 feet long, (mine is 6 feet), and fasten a handle 6 feet long to its middle, at right angles. The handle should be beveled, so that when in use, the board may be in about a level position, as in figure, and should be very firmly screwed on, as it can not be braced. Upon the upper side make scratches square across the board, at every inch of length, and mark the feet and halves and quarters of feet. Then make several pieces of board, each a foot long on top, and about 3 inches wide, with each end shaped like a sled-runner, as shown in the upper part of the engraving, and sharpen the bottom edge suitably for marking drills in the soil. In the middle of each piece, near the top, make a mortice 1 by 4½ inches. Fit them so that they can be easily slipped on to the long board, or head of the marker, and fas-



A GARDEN MARKER.

tened in any place by wedges. These bits of board can be fastened across the long one at any desired intervals, and the scratches for feet and inches will help to set them square, and to regulate the distances. Such a tool, with good usage, will last a lifetime, and will, I think, mark drills more smoothly and regularly than any arrangement I have seen described."

How Flowers are Fertilized.

BY PROF. ASA GRAY.

THIRD ARTICLE.—CLERODENDRON AND FIRE-WEED.

"Nature abhors close unions." That is in short the proposition which these articles are intended to illustrate. There are those, we hear, who still doubt whether this is true of flowers generally.

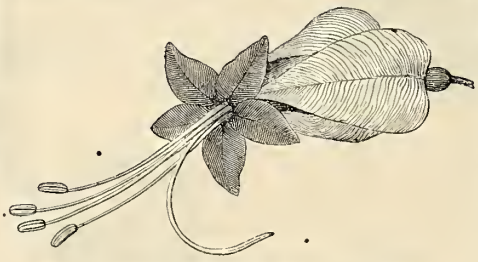


Fig. 1.—CLERODENDRON FRESHLY OPENED.

The only way to arrive at a correct opinion about this, is to examine as many different kinds of flowers as possible, bearing in mind that those cases in which a flower may self-fertilize, or may not, count for little either way, while those which cannot self-fertilize, or have only a slight chance for it, count for very much.

If I were asked to point out some single particular instance, of a perfect flower which was clearly intended not to self-fertilize, I think I should choose the flower of *Clerodendron Thompsonæ*, Mrs. Thompson's *Clerodendron*, a shrubby conservatory climber, from the west coast of Africa. It bears handsome as well as peculiar flowers, and has become common. [An engraving, showing a flowering branch of the natural size, is for convenience placed upon page 140.—ED.] It is remarkable for its pure white calyx and blood-red corolla. It has four very long and slender stamens, and an equally long and slender style. In the bud these are all rolled up together in a close coil. Then the

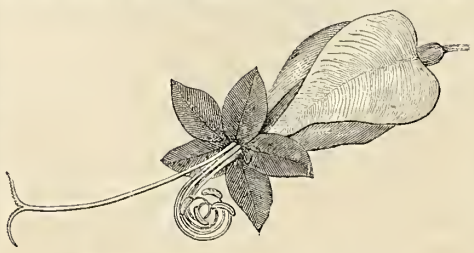


Fig. 2.—THE SAME A DAY LATER.

anthers are neither open nor mature, and the two forks of the style, the inner faces of which are stigmas, are closed and immature. As the flowers open, one by one, the stamens and style straighten and extend themselves. To understand what now takes place, we must look to the flowers themselves, not to the published figures—our own, of course, always excepted. Professor Balfour's original figure does not represent the case at all, nor does his description, except that he says the style becomes finally slightly curved backwards, which is not quite true. There is a charming figure in the Botanical Magazine, made from "a cut specimen," which may account for its inaccuracy in this particular, namely, that in all the flowers represented, the stamens and the style are nearly in the same straight or slightly curved line. Our larger figure, (on page 140), is nearer the actual truth, representing, as it does, the style as curved strongly forwards and downward, while the stamens are straight, or with a slight upward curvature. A blossom in this condition is figured by Prof. Balfour in a second article, describing the fruit and germination of the seed. But there is no reference to it, nor to any counterpart condition.

The actual state of the case, which attracted my attention several years ago, is here shown in figure 1, representing a freshly expanded flower; and figure 2, the same flower a day or two later.

When the corolla opens, the stamens and the style—which were coiled upward in the bud—straighten; the stamens remain so, at least for the first day, and open the slits of their anthers, so as to expose the pollen. But the style goes on beyond, curving downward and backward, and its forks remain closed, so that the stigmas are quite unapproachable. By the next day, or at least the day after, all this is reversed; the stamens are now rolled up and carried backward, while the style has straightened, spread its forks, and so the stigma stands just where the anthers stood the day before. The stigmas are now fresh and in good condition; the anthers have mainly discharged their pollen, and are drying up. There are two moments of time, and only two, in which the anthers and stigmas are at all contiguous. At the first, upon the opening of the blossom, the stigmas are immature and unapproachable; at the second, when the style rises and the stigmas are opening, there is a bare possibility that an anther may come in contact with the stigma, and still have some pollen to bestow upon it. But there is no doubting what this arrangement is for. A flying insect with tongue or proboscis long enough to draw nectar from the bottom of the corolla, and approaching the flower, as it would, from above, would get some part of the under side of its body dusted with the pollen of the freshly open blossom; then, on flying to any other blossom a day older, the very same part would be brought into contact with the stigma, and cross-fertilization be effected.

Fig. 3.—FIRE-WEED—EARLY.

Fig. 4.—FIRE-WEED—LATE.

We need not go to Africa, nor to our conservatories, for instances of this sort. There are plenty at home. Our common Fire-weed, (*Epilobium angustifolium*), so abundant and gay along the borders of woods and thickets—especially in ground recently burnt over—shows the same thing nearly as well. In figure 3 we have a freshly open flower, one of the many in the ample raceme; its 8 stamens are now discharging their pollen, freely dusting the heads and thorax of bees that visit them. But the style is turned downwards and backwards, wholly out of the way, and its stigmas fast closed. Figure 4 represents the same flower in its second stage; the stamens as they were, but they have shed their pollen; the style is now brought up into line with the stamens, but projecting much beyond them, and the four lobes at its tip, expanded into a cross, the whole upper face of which is stigma, and is pre-

sented to the arriving insect. As the insect passes from flower to flower, it can help no blossom whatever to its own pollen; but it will certainly convey pollen from the anthers of one blossom to the stigma of some other.

A cynical acquaintance of ours, used to declare that love-making and matrimonial engagements, resulted not so much from sentiment as from situation, that nearly everything depended upon contiguity. Now the stamens and stigmas of these blossoms are thrown very much together; and if such unions were legitimate and desirable, opportunities surely would not be wanting. But did ever cautious and calculating parents and guardians take more pains to frustrate undesirable attachments on the one hand, and to promote more prudent and proper engagements on the other, than is shown in the contrivances of which these flowers furnish examples?

Does the Stock Affect the Graft?

As grafting is now in order, and the experience of fruit-growers should profit those who are putting new tops upon old trees. Do not graft upon old trees that are in an unthrifty or dying condition, until you have pruned, manured, and cultivated them to give them a new start. After they have made new shoots, and shown that they have a new lease of life, you may graft with profit. Do not graft winter varieties upon early sorts, or tart apples upon sweet, if you want to secure good specimens of the new sorts you put in. There are many well authenticated facts which show that the stock does have some influence upon the graft. A neighbor of ours across the line, of an inquiring turn of mind, found in one orchard near him, trees of the Rhode Island Greening that habitually produced apples that rotted upon the trees in the fall, and none of them would keep until the new year, while the orchard close by bore fruit that kept well. Upon inquiry he found that these poor keepers were grafted upon early stocks and upon unthrifty trees. There were two causes at work to hasten the maturity of the apples, and make them comparatively worthless. If you want late keepers, graft winter varieties upon winter stocks. There is very little doubt that sweet varieties are made less sweet by being grafted upon some stocks. Carelessness in selecting stocks is one of the reasons why there is such a wide departure from the normal type in many of the more popular varieties of our winter apples. We are eating Northern Spys this winter from a county on the Erie railroad, that are so different from the Northern Spys of the counties on Lake Ontario, that we hardly recognize them. Our nurserymen ought to look after this thing, and in planting for nursery stocks, the seeds of early and late apples should be kept separate, and the young stocks designed for winter varieties should be grown exclusively from the seeds of the best keeping winter apples. We have no doubt that our best winter apples can be improved in their keeping quality by being grafted upon late keeping stocks, and by being grown upon well fed, vigorous trees.

CONNECTICUT.

[We are glad to find so practical a person as our correspondent adding his testimony to what we have long advocated.—ED.]

IT IS NEVER TOO LATE TO LEARN, says the proverb, but it has taken the French people some time to learn about potatoes. They have now had the potato almost 300 years, but, as we learn from M. Clos, who has been writing up the history of its introduction and culture, the potato has hardly yet found its way to some districts which are well adapted to it; in 1832 a great land-owner was obliged to require his farmers to plant it, under penalty of forfeiting their leases, and in 1813, one Dr. Saint-Andre, in a book written to recommend the culture, assures his readers that potatoes are really harmless food when they are perfectly ripe, and have not been too recently dug.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Tired Out.

I heard a sad story yesterday of one woman's hard experience for a year in consequence of overwork in years preceding. She seemed to bear the strain of nerve and muscle pretty well, toiling on without complaint, until a more critical time of life came—a few years before her fiftieth birthday—when nature would endure no more. She who had spent herself unsparingly for others, was now almost as helpless as a baby. Only great patience and toleration of all her whims saved her from insanity. She had most unreasonable and uncontrollable crying spells, and a strong dislike for some of her former good friends. Her physician counseled the family to bear with her as with a sick child, and by their tender care and patience she at last came through her troubles, to be again the companion and friend of her husband and children, but never again the drudge which they had thoughtlessly allowed her to be before her long illness.

Every day, now, I am longing for tidings from a friend very near and dear to me, though more than a thousand miles away. She too is "tired out," and has been flat on her back for long weary weeks, unable to bear even the sound of her baby's sweet prattle for more than a few minutes at a time, sucking her food through a tube because she cannot sit up to eat. Nobody knows what made her sick. When at last her wearied nerves and muscles gave way, and she was unable to leave her bed; when the doctor came, he said she looked as though she had been sick six months. She answered that she had "been *tired* for six months." He said it was a case of simple exhaustion, and that perfect rest and careful nourishment were all her case required in the way of cure. But it is slow work, this rebuilding a constitution so long over-taxed and gradually undermined. I have often whipped myself up when nature begged for rest, by thoughts of this woman's example. I supposed I did not work so hard as she, and what she could endure why could not I? This was foolish reasoning, since no two human beings are made exactly alike, and each must work according to individual capacity. And now I see that even she who worked on so patiently and self-sacrificing, and so seemed to bring a reproach upon us weaker sisters, could not endure all things. Her case must serve as a "warning" instead of the "shining light" it once seemed.

I know another woman whose heart is sometimes very heavy and sometimes rather bitter during the weary months that precede confinement. To me alone has she poured out her full heart. Alas! alas! how little help can any of us give another. Yet sympathy is genuine help after all. This woman's mother-heart is sometimes almost broken. She is almost constantly tired out and discouraged. No other ambition has been so strong as the desire to be a good mother to her children, but now she finds herself so cross and irritable that she can scarcely bear the sound of her children's voices. Night and day she has their constant presence, never one moment free from care. She has also many financial worries—little matters of business to attend to for her husband, and many a makeshift to eke out the family support. She has read, and knows well, the common theory of a mother's responsibility for the health and disposition of her children, yet her nerves and muscles are constantly over-taxed with care and work beyond her present power. She longs constantly for rest, but when she can lie down occasionally for a nap, the thought of her children's neglected education and other matters, that she cries herself into a headache instead of sleeping.

A Few Words To Husbands.

Wives and mothers need warning, but husbands and fathers need it more. They ought to save their wives from over-work and physical exhaustion. There has been much talk about the need of "enlightened motherhood," but what does enlightenment avail a slave? Many a mother is a slave in her own house—a slave to the rolling-pin, the washboard, and the sewing machine. She has no chance to follow her highest instincts, the cravings of an enlightened mother for the free and happy companionship of her children. The prospective mother has seldom the free opportunity to get away from the (to her) nauseating smells of the kitchen into the fresh air for daily exercise. She cannot often follow the craving for a different diet. Men are very ignorant concerning women. They generally regard them only as feebler men, full of foolish whims when their nerves get a little unstrung. When they come to understand the case better, and to reverence as they should the peculiar work of God in the nature of woman as the mother of the race, they will no longer sneer at the results caused by overstrain of one kind or another.

Calves and Babies.

An acquaintance once complained to me that when she took her children into the country in pursuit of fresh air and wholesome food for them, she couldn't get the latter from the farmer's folks where she boarded, because the calves had to have the best of everything. There was plenty of milk brought in, and strained, every night, but only the most meager supply was grudgingly allowed to her and her children. They could have all the butter they wanted, but the milk was all needed for the calves, and the cream skimmed from it before it went back to the calves was all needed for butter. Fine flour bread and butter, with plenty of cake and pie, were set before them freely, but she wanted something better for her growing children. It was vain to ask for oatmeal or graham fare, which would furnish something to strengthen the little ones as well as to fatten them. But when she discovered a quantity of canaille, or middlings, she thought perhaps the children could have some made into porridge to eke out their poor little suppers. But no! The calves did not have enough milk, though they took it all, and the canaille had been brought home for their use. Stock-raising was profitable in that part of the country, but no one seemed to think of applying to the rearing of children the same common sense rules that were understood and accepted in respect to raising calves. No one would have thought it so good for the four-footed babies to feed them on fine flour bread, and cream, as to give them porridge made of shorts and skimmed milk, even though sour. Four-footed babies are treated on scientific principles, while precious human babies take their chances from ignorant and hap-hazard treatment.

An Arrow-root Diet.

The other day I heard of a baby who was nearly starved to death on arrow-root gruel. Its mother had asked her physician whether arrow-root was healthy food for a babe. He replied in the affirmative without farther explanation. So she proceeded to feed her child on that, and that alone. It pined away, and seemed at last too weak to endure any more of this world, and the same physician was summoned. "What have you been feeding the child?" he asked.... "Arrow-root," she answered.... "What else?" he asked.... "Nothing else," replied the mother.... "Why, woman!" exclaimed the doctor, "you have been starving the poor baby." Then he explained to her that arrow-root contained only starch, and could not possibly furnish all of the material necessary to build up the child's physical frame and furnish the various elements needed to make it a healthy child. A little of it would do no harm, but other food must be furnished. Good fresh milk is probably the very best food for babies lately weaned. Next to that I know of nothing so reasonable as gruel and soft bread, or crackers made of sifted graham flour without shortening or sugar.

The canaille is really the best part of the flour, or the most nourishing, but if the bran can be ground fine enough to be pleasant in the eating (and this is possible), it is not reasonable to separate the parts of the wheat kernel for ordinary use.

Bed-Bugs.

Only those who feel a lively interest in the exter-

mination of this abominable insect, need read this. Such readers I know I shall have. Once I supposed that no decent housekeeper ever had any trouble with bed-bugs, and I still believe that no decent housekeeper will rest contented while any remain on her premises. But alas! and alas! The small pestiferous creatures have given me more than one severe trial of patience and skill.

I don't know that I ever saw one of these bugs until I had grown to womanhood, but I have seen too many since. How could I help it when I lived in the midst of risks like this one I will give as a sample, though rather worse than any other experience of mine in that line. A member of our family left a black dress at the house of a neighbor, a mile distant, and the dress remained there several weeks. When it came home I had the forethought to open it out of doors, fearing that one or two of my neighbor's lodgers might have found their way into it. I state but the exact truth when I assert that I found in that bundle nine full-grown bed-bugs. What if the bundle had been laid in one of the sleeping rooms for days before it was opened? In books that had been lent, and in new papers, fresh from the little country post office, I found these insects, and yet for a long time I never found one at home in my pleasant little log house. At last, after I began to have a hired girl, I found them in almost every room, and by using kerosene on the beds before I could get anything else, I scattered them into the walls. I did not know how to hunt the creatures, and so I worked, night and day, all summer long—and that accounts for some of the premature wrinkles I wear. But I have learned what some discouraged housekeeper will be glad to hear, that even an unplastered log house may be cleaned of vermin, after they have got considerable foothold in the walls. It is sometimes a hard fight, but how can any one give it up and have any more enjoyment in this life? Some have sold their houses for the sake of getting rid of the live stock infesting them—rather wicked treatment of purchasers.

The most natural place for bed-bugs is in the beds—or in the bedsteads. It is a piece of folly to simply try to drive them out, without attempting immediate extermination. They can be caught and killed more easily in the beds, than in the walls, floors, or furniture. If a bed is considerably inhabited by bugs, it is hardly safe to take it down and carry out the pieces. I should prefer to take off the clothing, one piece at a time, and examine each thing very carefully, especially along the seams and corners, and laying each piece so examined, out of doors if possible. Then I would put a large white sheet on the floor under the whole bedstead, and beginning at one corner, with a fine knitting needle, poke out the cracks as clean as possible, stopping often to put the bugs to death before they run away. It might be well to set each leg, one at a time, in an old pan or tub with hot water or strong soap suds in the bottom. Examine every nail hole and loose place, every crack and joint, even along the top of the head and foot boards.

It seems to be a common practice to scald suspicious bedsteads with boiling water, but this very seldom finishes the business. I am told that it does not destroy the vitality of the eggs, but perhaps the continued propagation of the vermin in bedsteads often scalded, is due to carelessness in hunting out all of their haunts. Of course boiling water injures the varnish of bedsteads. It was a long time before I learned to know the eggs of the bugs. Housekeepers who had had years of acquaintance with the grown and growing specimens, would tell me that the black specks on the wood were nits, but they are of the same nature as fly-specks. The egg of the bed-bug appears to the eye white and hard, shaped like a long hen's egg. Under the microscope it has delicate rainbow tints, and shows a depression in one end, like a turtle's egg. These are usually laid on rough wood, or among slivers. I think they can all be discovered and destroyed by a careful hunter. They can be broken by hard pressure; but I believe that *corrosive sublimate* destroys them, and *ammonia* is said to do it also. It is well to press a thin knife blade through the cracks, and scrape it along the bed slats.

Having killed every live specimen, it is well to wash the bedstead clean, taking it down and out of doors for the purpose, if one prefers, and then apply your corrosive sublimate or ammonia. I like ammonia better than anything I have tried, but careful hunting, and personal attention to the immediate death by drowning or by crushing, of each specimen discovered, avail more than any poisons.

As soon as a bed is suspected, pull it out from the wall, and keep it as free from touching other furniture as you can, until it is considered free.

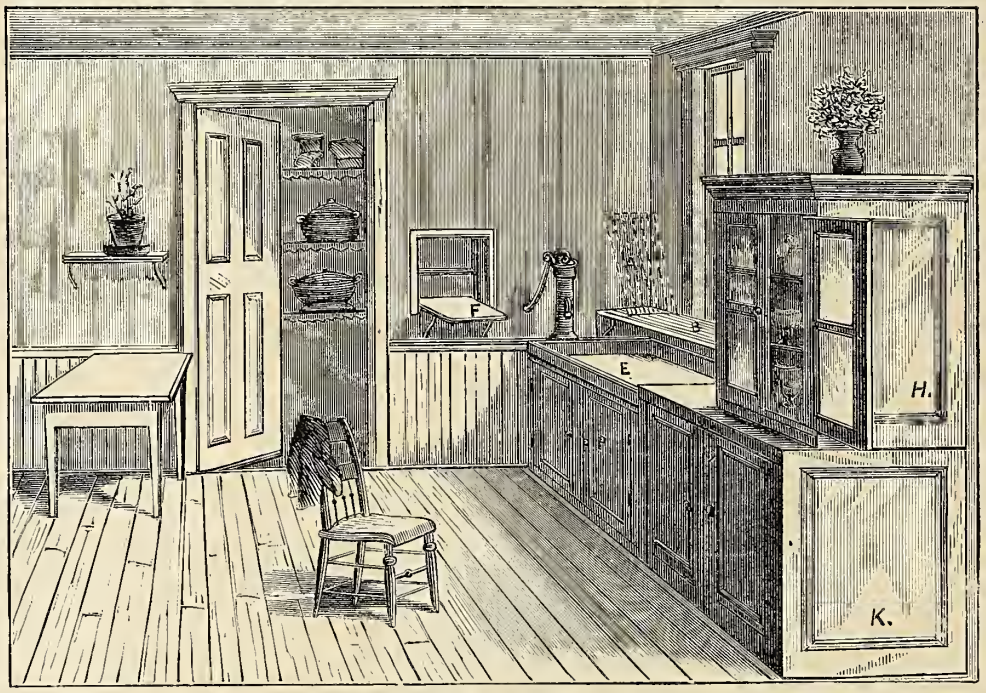
There are some patent mixtures sold as poisons for bed-bugs, but I should let them alone. After I had cleared my log house pretty well of bugs, I had the walls of the sleeping rooms washed with strong lime, or salt and water, applied with a paint brush. Bugs hate salt, and will not go where it is. If the bugs are not killed, but are simply driven from their old haunts by disagreeable applications, they lay their eggs on the bedticks and comfortables, and hide in the bedding, and floor, and walls, and make night as hideous as ever. Many believe that they can not be entirely got rid of, if they once get a lodging in the walls, but I *know* this belief to be untrue. Intelligent perseverance can overcome even such a mountain of trouble. People who plaster houses infested already with bugs, hoping thus to circumvent the enemy, are usually disappointed. The bugs find some way to crawl out.

Sleep.

A correspondent sends an article upon sleep; his views, though eminently sensible, present nothing new, and the article is too long for us to give it place. He illustrates the improper use of sleep by the case of a young farmer who brings city habits into the country, and rises anywhere from 7 to 9 o'clock in the morning. We think we know that young farmer. Of his own notion, or through the advice of his friends, he concludes he never will make a business man, and as anybody can run a farm, he thinks he will try it—not work himself you know, but manage it; he buys fancy animals and farm machinery, and usually with other people's money. His house is furnished in city style, and he has the usual corps of city servants. We know him, in fact he is rather too numerous. But as to sleep; our friend hopes, if we cannot publish his article, we will give our views on the subject. That we can do, and very briefly. Sleep, and enough of it, is one of the prime necessities of our existence, and more persons are injured by having too little than there are by taking too much. To appear "smart," many persons deprive themselves of the amount they really need, and make it up by beginning their "long sleep" all the sooner. No general law can be given as to the proper amount of sleep; like eating, it is governed by the requirements of the individual, and must differ greatly. The time at which sleep is taken probably makes less difference than its regularity. Railroad men on night trains, watchmen, printers, bakers, and others, who regularly work at night and sleep in the day, are not known to be less healthy than others; and sailors, who sleep by short snatches at intervals all through the 24 hours, appear to be none the worse for it. The hours for sleeping must be governed by one's occupation, and as the work of the world is arranged, a large number of persons must be awake while others sleep. If this were not the case in cities, there would be no milk or hot rolls for breakfast, and the morning papers would all be evening ones. Unless one can accommodate his sleeping hours to his business, he would not be desirable as an engineer on a locomotive to a night train. Now farming happens to be an occupation in which to succeed certain work must be done in the morning. It is imperative that the animals be fed early, or they will not thrive. A day's work cannot be done by hired men unless they are started early, and they must know that at any time, early or late, their work is liable to be supervised, unless farm work starts early, things in general will go to the bad. Our notion is that if one cannot adapt his hours for sleep, as well as all his other habits of life to his business—especially if that be farming—he had better go into some other business, as it is very certain that he will never succeed, except in running behind hand.

The Convenient Arrangement of a Kitchen.

There is no one room in the house the arrangements of which is of so much importance as that of the kitchen. This is especially the case in a farm house, yet while we see the kitchen in a city house arranged with great care to facilitate the work of servants, the kitchen of the farm-house seldom has much thought bestowed upon it to help the labors of the farmer's wife. The kitchen in the American farm-house, even among those farmers who are spoken of as "well to do" is the most important room, and as its work is more generally performed by the wife or daughter than by "help," it is of the greatest importance that everything possible be done to make this work as light as possible, and to save taking every unnecessary step. We have in former volumes published plans for arranging the kitchen, and for the immediate surroundings of the sink, but no single plan will answer the needs of all, and while what are known as "modern improvements" are well worth all they cost, yet that all, or even a fourth of it is entirely beyond the reach of many, especially that large



A METHOD OF ARRANGING A KITCHEN.

class who do not expect to lay out in ready money on their whole house what would be the cost of the fixtures of a city kitchen of the first class. We give here a view of a portion of the interior of a kitchen by our correspondent, L. D. Snook, whose household conveniences have been frequently presented in these columns. The sink *E* is of either wood or iron. If made of pine and well nailed together, and its inside thoroughly impregnated with heated linseed oil, it will last a life-time. A convenient width is 2 feet 4 inches by 3 feet 6 inches long, and 4 inches high inside above the bottom board. An iron pump is placed in at the end near the wall, and connects with the cistern. The outlet or discharge pipe is at the opposite end near the window, the pipe may pass downward into the cellar and enter the drain through the cellar wall, or pass out of doors above ground, the water falling into a funnel-shaped box, at the mouth of the drain. Be certain that it is so arranged that no foul gases can enter the room through the outlet pipe. The closet *P*, provided with doors, is about 2½ feet in hight, and as wide and long as the sink. Another closet, *K*, is about 4 inches higher than the top of the sink, of the same width, and about 4 feet in length. The china closet *H*, is about 15 inches shorter than the closet *K*, 6 inches narrower, and from 3½ to 4 feet in hight, it is provided with two glass doors and two shelves inside upon which to place the glass, china, silver, and other choice table ware. Being close, these are kept from dust and flies. If more convenient, the greater portion of the dishes of every-day use may be also kept here. In closets *P* and *K* are kept the kettles, tinware, and the various cooking utensils. A wooden rack, *B*, is made from six hard-wood sticks 3 feet in length and an inch wide, and ¾ inch thick, these are placed ¾ of an inch apart; the ends are firmly attached to a small block, which is hinged to the small bracket shelf attached to the wall in the corner near the window and just above the sink; upon this are placed the dishes to drain after being washed, and it may also be used for other purposes. When not in use it folds up against the wall and out of the way, as shown at *A*. This should be thoroughly oiled instead of painting it. A window opening into the pantry, 15 inches wide and 20 inches high, is cut through the wall near the pump, and a bracketed shelf *F*, 15 inches square, is attached to the sill. When dishes that belong to the pantry are washed and wiped at the sink, they are placed upon this shelf, ready to be set in their accustomed places in the pantry. For convenience the stove should be placed upon the side of the room occupied by the closets, or near where the table stands in the illustration. The water-pail can be set upon the top of closet *K*, near the sink, or kept in the pantry, as most convenient.

The Management of Lamps and Oil.

The lady of a house in which we are sometimes a guest, was in great trouble with her lamps, of which she had three or four different styles for burning kerosene. One lamp after another, a short time ago, began to burn poorly; new wicks were put in all around, but in a few hours they were as bad as before. Being taken into consultation, we suggested that she had a poor oil, but the oil was Pratt's, and bought in the original packages, besides, there was the German students' lamp, in which the same oil burned splendidly. We became interested in the case, and made a careful *diagnosis*, as the physicians say. The oil was of a good kind, the wicks were new, the lamps, of different styles, each apparently perfect, and as good as ever; while all the lamps but one had been gradually growing bad, and were now nearly useless, this burned as well as ever, and as well as any lamp need to burn. A minute's thought given to the difference between the students' lamp and the others, gave us the clue to the trouble. Asking for a glass jar, an empty fruit jar was brought, and all the oil from one of the delinquent lamps, with a previous shaking, was turned into it. The appearance of the oil in the jar was such as to call forth an exclamation of surprise, and well it might, for it looked like muddy water. Here was the cause of all the trouble, an accumulation of dust and other impurities. The lamps had been filled month after month without emptying; the wicks took up the clear oil, leaving the particles of dust behind; the lamps being daily filled, this dirt gradually accumulated, until at last it was present in such quantities as to clog up the wick and so destroy their porosity that they could not take up enough oil to give a proper light. Clean oil and new wicks being supplied, the lamps gave as good a light as ever. "But how did the students' lamp help you to guess what was the matter?" we were asked. Because we saw that the wick was not in the main body of the oil, but was fed by a tube which we noticed started from the oil reservoir at some distance above the bottom, so that the impurities could settle, and not reach the wick. On emptying of the outer reservoir of this lamp, the oil was found to be as bad as in the others, but the particles of dust did not get to the wick. The quantity of dirt in the oil induced us to go a step farther, and inquire where the main supply of oil was kept; we found that the can was in an open shed, and not far from where the coal ashes were sifted; the funnel used to fill the feeding can was kept close by. Here we had the whole story, the funnel daily wet with oil, was where it could catch whatever dust might be floating in the air, with an extra supply when the coal was sifted. When the feeder was filled, the dust from the funnel was washed into it, and from thence it went into the lamps, where it accumulated with the results we have stated. Of course this, the main source of the trouble, was easily remedied by providing a proper place for the oil-can and funnel. The lady was delighted at finding so ready a way out of her troubles, and we relate the case in order that others may profit by the experience. As most of the lamps now in use are of some kind of metal, their contents cannot be seen, and it will be well to ascertain occasionally the condition of the oil within them. With the utmost care some foreign particles will find their way into the oil, and after a long time that in the lamp will be quite impure. If the oil emptied from the lamp is allowed to stand a few hours, all the dirt will settle to the bottom, and the clean portion may be carefully poured off for use. See that the oil vessels and funnel, if one is used, are kept away from the dust.

Fig. 1.—AN ARTISTS IDEA OF AN AQUARIUM.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks—About an Aquarium.

As I was looking over a German magazine, my eye was caught by a picture, which seemed to me so pretty that I thought it would please you—so here it is; the *silhouette* figures are very graceful, for the German artists excel in that kind of drawing. At the outset some of you will wish to know what a "silhouette" is; while the older boys and girls may perhaps recollect that a little over a year ago, when we had a comic picture of this kind, I told you that they were so called because a French gentleman by the name of Silhouette, was in the last century famous for his skill in making these pictures. You see that they are all solid black, with no light and shade, as other engravings have, and the whole story of the picture must be told by its outlines. The figures are worth studying, for it is wonderful how much beauty of form and expression an artist can put into a mere black spot. But what is it that these figures are clustered about—the two quaint creatures below, and the two so much interested above? Some will probably say "a globe of fishes," and others "an aquarium." This part is not all in silhouette, as it would much puzzle any one, I think, to represent a glass globe with water, all in solid black. Well, this little silhouette, besides pleasing me by its beauty, reminded me of a number of letters that have come to me during several months, asking me to tell about making and managing an aquarium; there are so many things to be talked about, that some have to wait. Now we will have our aquarium talk, and the first point to settle is

WHAT IS AN AQUARIUM?

Very different answers would be given by you; according to the different things so called that you have seen. One would say "it is a large iron frame with glass sides, holding nearly a barrel of water, with fish in it."—Another that "it is a box with a marble or slate bottom and ends, holding water with plants in it"—and still another, who had seen a wooden tank with glass sides, would so describe it. In the first place, the material, size, and shape of the affair, do not make an aquarium. A tank with fish only in it, or one with plants only in it, would not be, according to present notions, an aquarium. Many years ago any tank, or basin made in a greenhouse or garden, for growing water-plants, was called an aquarium, but the naturalist's aquarium must have both plants and animals growing in the water, and it must be so arranged that we can see what is going on inside. The name aquarium comes from the Latin *aqua*, water, the same word that *aquatic* comes from, and when a French lady arranged one to study living animals and plants, it was called at first *aquavivarium*, from the Latin *vivus*, alive, but the name was found to be too long, and the last part is now left off. Recollect that the plural of aquarium is *aquaria*, but it is very common to hear persons say "that aquaria," which is quite wrong. It is not likely that the boys and girls who wish to know something about aquaria, could go to the expense of several dollars for the large and showy ones, nor is it necessary.

THE OBJECT OF AN AQUARIUM

is, or should be, for their instruction and amusement, and a great deal of both can be had from one which need cost but little. A clear glass jar, that will hold from half a gallon to a gallon of water, will answer for a boy's or a girl's aquarium; the form of the jar makes the things within it, unless they are close to the glass, look much larger than they really are, and for this reason the tanks with the flat sides are better. But those who really wish to learn what an aquarium has to teach, can find enough interest in one or two jars. May be after a while an older brother, or the father will manage to make one with flat sides, but to construct one of these, would be too difficult for a small youngster. In most houses there may be found some kind of a jar that will answer, and if not, to buy a plain straight jar, those with tin caps, such as hold candies and such things in the shops, (fig. 2), would not cost very much. A large bell-glass, such as confectioners use to put over cakes, placed bottom up upon a strong wooden stand or foot, (fig. 3), makes a nice aquarium. I have said that an aquarium proper must have living plants and animals in the water, but before we put our plants and animals in the jar or other tank, (as that which holds the water is usually called), let us consider

HOW THE AQUARIUM WORKS.

Nothing is more interesting about the aquarium, than the fact that when there are the proper number of plants and

animals in the water, both will flourish, and all will keep pure and sweet, so that, if all goes on right, the water need not be changed for weeks and months. You know if fish are kept in water without plants, they will die in a few days unless the water is changed; so if plants are kept in water by themselves, they do not grow so well, and the water gets thick and dark. Now why the fish and other water animals need the plants, and the plants grow all the better for having animals in the water, is a matter that is not quite so easy to explain to young people, but I will try to give you some idea of it. Before we attend to what goes on in the aquarium, let us see what plants and animals have to do with one another out of it. To breathe, you, and all other animals, must have pure air; if shut up in a tight box, where you had to breathe the same air over again and again, you would soon become faint, and then, if no pure air were let in, you would die. Breathing not only takes something out of the air, but adds something poisonous to it. That part of the air which, by breathing it, keeps us alive, is called *oxygen;* that which we give out to the air in breathing, is the waste of our bodies, and is called *carbonic acid.* You can see neither of these, and you must take my word for them until you can learn more about them. So not only you, but all the people in the world, and more than that, all the animals, from the largest to the smallest, are constantly using up the good part of the air, and giving back to it something that is poisonous. Probably you will wonder why all the air does not after a while get bad and unfit to breathe, and here is just the wonderful thing about it all. The bad matter which we breathe out into the air, is just the very thing that the plants need for their breathing, for they do breathe through ever so small holes in their leaves. When the good part of the air (oxygen) goes into our lungs, it takes up the waste of our bodies, and when breathed out again, though the oxygen is all there, it is so mixed with what we will call *carbon*, as to be unlike what it was before, and the two together make the carbonic acid that is so dangerous for us to breathe, even when mixed with much air. Now is it not a most wonderful and beautiful arrangement that plants should need for their growth, that which is so hurtful to animals? And more wonderful still, they take the poisonous carbonic acid into their leaves, pull it to pieces, so to speak, use the carbon to help them grow, and the oxygen, being freed from its bad company with carbon, is sent out by the plant, into the air again, just as pure and as useful to animals as before. Now we must

APPLY THIS TO THE AQUARIUM.

The plants and animals here are surrounded by water, and not as those on land by air; and these water animals and plants breathe but very slowly, as compared with the others. Here is one important thing, the good part of the air, (oxygen), and the bad carbonic acid thrown off in breathing, can both be dissolved in the water; you know that solids, like salt and sugar, will dissolve in water and disappear; so these gases are dissolved in the water, and you do not see them. If you put some water in a bright tin pan, and set it on the stove, you will see as soon as the water gets quite warm, thousands of little bead-like bubbles, which appear, long before the water is hot enough to boil; these bubbles are the gases (oxygen, carbonic acid, etc.), that were dissolved in the water, but as they can not stay dissolved in hot water, they appear as these bubbles. Fishes and many other water animals breathe by *gills*, which are lungs made to take the air from the water; as the water passes over these, they take out the dissolved oxygen, and give up carbonic acid, which is at once dissolved in the water; the water carries the carbonic acid to the plant, which, just as the land plant, will take it up, use the part it needs, and give off the oxygen, to be dissolved in water for the use of the animals again. If, when you have a plant growing nicely in your jar of water, you set it in the sun-light, the oxy-

Fig. 2.—GLASS JAR.

Fig. 3.—GLASS COVER.

gen will be given out by the leaves faster than the water can take it up or dissolve it, and it will appear on the leaves as little bubbles, smaller than pin heads, just as it did on the pan of heated water. Now I know that this is a pretty hard "talk" for little folks, but I want you to

THINK OF THIS,

and talk it over together, and with older persons, until you quite understand it. I wish you to learn how your aquarium should work, and see in it, though but a jar, just what is taking place in every stream, pond, and lake, and not only in these, where all goes on slowly through the medium of the water, but on land and all over the world, where the plants and animals are surrounded by air, instead of water. How admirably has the Creator

Fig. 4.—MERMAID WEED.

Fig. 5.—WATER STARWORT.

arranged the relations between animal and plant life! The animal breathes out into the air, or the water, that which would be poisonous to itself, were there too much of it; the plant needs this animal poison, changes it, uses a part for its growth, and gives back to the air just that which the animal must have, or die. So in your jar, the water stands in place of air, and the animal and plant each works for the good of the other here....Having your jar, you need to wash some gravel clean, so that there will be no earth amongst it, and put an inch of this in the bottom of the jar, and fill it nearly to the top with water from the river or brook, or with rain water; well water is in most places too hard. You will then be ready for

THE PLANTS AND ANIMALS.

Unfortunately most of the plants best suited to the aquarium, are not generally known by common names; any plant that you find in still places in a stream, or in a pond, that has its leaves or a part of them quite under water, will answer. Take the best you can find at first, and if you afterwards come across better ones, you can make a change. Here are pictures of two common ones; figure 4 is the "Mermaid weed," which grows partly under water; and figure 5, the "Water Starwort," which has little chickweed-like leaves floating on the water, with others of a different shape below. Both of these are common, and you will later in the season find others. Wash the plants, pick away all dead parts, and tie in a small bunch, to this fasten a stone to anchor it, and put it into the jar. Keep at present from direct sun-light; then catch a lot of fresh water snails, which are abundant in small streams and on the edges of shallow ponds; get all the different kinds you find, and put into the jar, a dozen or two. As soon as you can find any young tadpoles, or some frog-spawn, put in some, and if all goes well for a week or two, you may try a very small fish—just one. If the fish after a while comes often to the surface to breathe, take it out, for you have then too many animals for your plants. Better at first watch the snails and tadpoles, about which I will tell you more at another time.

THE DOCTOR.

Aunt Sue's Chats.

BELLE wants me to suggest some names for her little sister, and to give the meanings. That is easy enough, but I must leave her to make the choice. Adeline, *a princess.* Agatha, *good.* Agnes, *chaste.* Alice, *noble.* Beatrice, *making happy.* Bertha, *bright.* Blanche, *fair.* Charlotte, *noble.* Clara, *clear or bright.* Constance, *constant.* Dorothy, *the gift of God.* Edith, *happiness.* Emily, *beloved.* Eunice, *fair victory.* Frances, *free.* Gertrude, *all truth.* Grace, *favor.* Helena, *alluring.* Letitia, *joy,* Lucretia, *chaste.* Lucy, *shining.* Mabel, *lovely.* Margaret, *a pearl.* Mildred, *mild.* Paulina, *little.* Phœbe, *the light of life.* Rachel, *a lamb.* Rhoda, *a rose.* Ruth, *beauty, trembling.* Sarah, *a princess.* Sophia, *wisdom.* Susan, *a lily.* Winifred, *winning peace.* Zillah, *a shadow.* There, dear, take your choice.

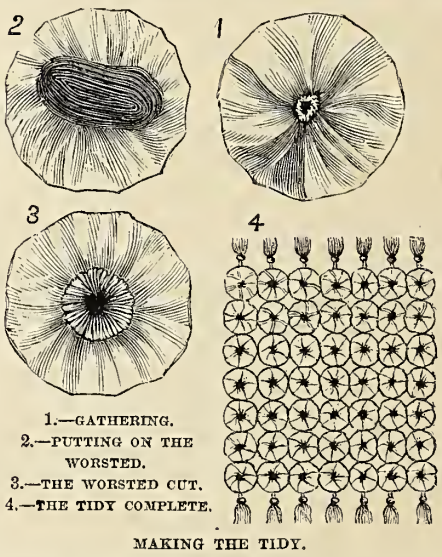
J. L., Jr. (of Philadelphia)—to whom we are much obliged for the suggestion—writes me that a perfumer (or "atomizer"), which can be procured at the druggist's, answers the purpose better, for "spatter-work," than the brush and comb. He says it "spatters more evenly," which is very desirable.

We publish the accompanying letter (from a kind friend in Irvington, N. Y.), as it is just possible that some of our readers may not know that it is with just such letters as Lucy W. describes that we construct and find out our anagrams. She gives us two or three puzzling words, and in return I propose that she finds out these—"LINET," "RHONSECO," and "LAUDING"—all simple, English words.

Jan. 29th, 1876—*Dear Aunt Sue:*—We (that is to say, my husband, children, and myself,) have been much entertained with your "Chats" in the *American Agriculturist.* One of your puzzles, entitled "Pi," put me in mind of an old game we played when we were children, which we tried to our great amusement, and also that of our friends; and I thought that perhaps it might be new to some of your readers; and as it costs nothing, it is a very good game for these hard times. We call it "Letters." Get some white card-board (various kinds of boxes, such as are thrown away in stores, will do), cut it into pieces about an inch square, then print, with pen and ink, the letters of the alphabet on both sides of the pieces of card-board (the letters must be the same on both sides) as large as the card-board will allow conveniently. My family consists of six persons, and I made nine of each consonant, and fifteen of each vowel. Make *all* capitals. Each person then picks out the letters to make some word, mixes them well, and hands these letters to one of the party to find out the word by putting the letters together. It appears simple, but sometimes four letters only will be very puzzling. It is a good exercise in spelling, and while to read about it does not appear very amusing, we find that everybody likes it, from children of ten to men with gray hair. Such words as "dhoep," "reeppaacan," and "osduanthg," have given us much amusement. Hoping that this suggestion may afford pleasure to some of your many readers,

I remain, yours truly, LUCY W.

"LITTLE MARY."—I do "sympathize" with the girls' desire to make "inxpensive presents," and sigh for the return of the good old days when a watch-case (home-made), or a little bouquet of flowers expressed all the



1.—GATHERING.
2.—PUTTING ON THE WORSTED.
3.—THE WORSTED CUT.
4.—THE TIDY COMPLETE.

MAKING THE TIDY.

love and good-will that is now expected to be embodied in a silver tea-set or a set of diamonds. "A tidy for twenty-five cents" rather taxes my ingenuity, but I think I can do it, providing you have saved your scraps of white muslin. Cut out 49 circles of "mills," of 5 inches diameter. Gather each one around (as though you were going to cover a button with it), and pass your needle down through the exact center, drawing it up into a little rosette (fig. 1). Fasten it with a few stitches on the back, then pass your needle through to the right side again. Now wind some red worsted (or any color you prefer) ten times around your two fingers (cut off the end of the worsted), and lay it across the center of the rosette (fig. 2); then catch it through with your needle and thread, and fasten securely. Now cut the loops, leaving a little tuft of red worsted in the middle of the white rosette (fig. 3). When you have the 49 rosettes thus completed, unite them as in figure 4, by a few stitches. Fasten a worsted tassel to each rosette in the upper and lower rows, and the tidy is finished. It will take about an ounce of worsted, for which you have to pay (in New York) from 15 to 20 cents.

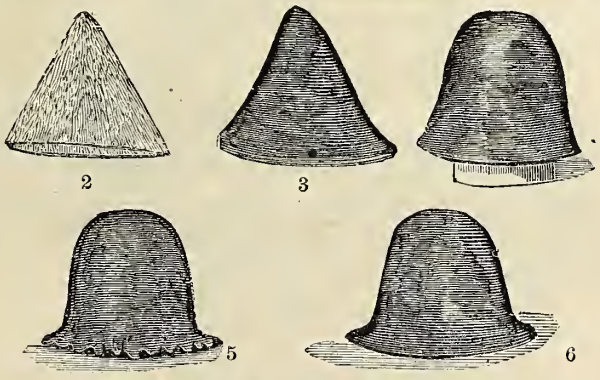
SOPHIE.—To "spell blind pig with two letters" is a very old joke, and is easy enough—just put out his i—leaving only p-g.

Thanks for letters, puzzles, etc., to Rosa Brodie, M. S. Lillie (we only care to publish original puzzles), S. L. P., Cora A. L., F. Nichols, "One of the Youngsters," Frank, May, and Charles Stutt (or Stull, or Stults), but the letters are so lassoed with flourishes that I can't decipher them), Lucy and Sunie, Eddie H. E., J. C. H., S. B., Bennie, Mollie, A. W. W., Pinkie, and Corporal Jones.

How Felt Hats are Made.

Now that people have found out that soft felt hats are much more comfortable than stiff ones, they are much worn by men and boys; of late women and girls have taken a fancy to them, and no doubt both boys and girls would like to know what felt is, and how hats are made of it. Felt is a kind of cloth made from wool or hair, without being spun or woven. If you pull a piece of felt to pieces, you will see that there are no twisted threads in it, but that the wool sticks together quite firmly without any twisting. Wool-felt is much stronger than hair-felt, which is soft, and is easily pulled apart. When wool is seen by a microscope, every fiber or single shred of it is very rough, and has a number of very fine points or scales on its surface, which lap over one another like the scales on a fish, or a pine cone. The ends of these points stick out a little, so that they will catch into one another and hold each other, when the wool is tangled and pressed together. These points are so small, that upon the finest fiber of wool, only an inch long, there are more than twenty-three thousand of them. If wool was perfectly smooth, and had none of these scales, it would not be so useful to us as it now is; for instance, we could not make hats of it in the easy way we now do. When a hatter begins to make a hat, he takes the proper quantity of wool and lays it upon a table. Fixed upon the table there is a bow, which is bent, and has a bow-string, much like those which boys make to shoot arrows with. The hatter pulls this string and lets it fly amongst the wool, which is thus thrown up very loosely, and the finer parts fall down again, while the coarse ones and the dust are thrown out. When the wool is cleaned in this manner, it is beaten with rods, and in a short time becomes matted or *felted* together, as the beating causes the tiny scales or points to take hold of each other. The felt, which is now very soft, and will as yet barely hold together, is made into a shape like that of figure 2, and double; in this shape it looks very little like a hat, but more like a three-cornered bag, wide at the mouth, and narrow at the bottom. If the felt is too thin in places, more wool is laid upon it where it is needed, and beaten down until it is right. A piece of oiled paper is put between the folds, and the felt is then dipped into a hot acid solution, which shrinks the wool, and makes the felt close. The felts are then taken to the room where the hats are shaped out and laid upon the floor in piles until wanted. In this room there is a round table, which slopes towards a boiler in the center, in which there is hot soapy water. The men and boys who work in this room, stand around this table, and each taking one of these pieces of felt, the bags just described, dips it into the hot soap-suds, then lays it upon the table, and rolls and presses it with wooden rollers that are thicker in the middle than at the ends. This is shown in figure 1. By this pressing and rolling the felt in the hot soap-suds, it becomes close, hard, and tough. A piece of flannel that is rubbed too much in washing, and squeezed in a wringer, will become hard and shrink, and for exactly the same cause that makes the hat felt thick and tough. After it has been worked in this way for some time, the felt becomes in shape similar to figure 3. Then it is put upon a block like those seen upon the shelf in figure 1, and the round crown is worked out with the roller and the help of the hot soap-suds, until it is shaped as in figure 4, and looks something like a hat, but has no brim. It is then placed upon a shorter block, and the brim is turned out, the wrinkles being worked out by being rolled and beaten while wet. This is seen in figures 5 and 6. It is now a hat, at least in shape, but in color it is a dirty gray or brown, and rather rough looking. It is now dyed, and when dry, is ironed and brushed upon a block of the exact size needed to make it fit a person's head, until it is smooth. It is then bound and lined, when it is ready to be sold in the shops. This is the old-fashioned way of making hats, and is now only in use in small factories. In large factories the felt is made by a very curious machine. This is a sort of box in which there are a number of beaters, which go round very quickly and stir up the wool, which is fed into it by girls, and shake out the dust and coarse hairs from it. A strong draft of air is blown through the box, which carries the cleaned wool through an upright narrow opening at the end of it, in a thin sheet. Just opposite this opening there is another machine, which has a hollow mold the shape of the hat, as it appears in figure 4. The surface of this mold is full of small holes, through which a strong current of air is drawn by a fan in a room below. This current draws the loose wool which comes from the narrow opening in the first machine, to the hollow block and holds it there. The workman turns the block around as it may be needed, to get enough wool evenly all over it to form the felt, and presses it with his hands until the felt is thick enough. Then the draft of air is turned off, and the piece of soft felt is slipped off from the mold, and dipped into a hot acid solution, which instantly shrinks it, and makes it stronger and more solid. Then it goes through the same operations as have been described to form and finish the hat. With this machine the felt is made much more quickly and cheaply than by hand. Some years ago all kinds of hats were made in this way. The best were "beaver hats," and very expensive; they were made of the fine fur which lies next to the skin, and under the coarse outer hair of the beaver. Cheaper fur hats were made of rabbit's fur, and even the fur of cats. But nearly all the stiff hats, which boys sometimes call "plug hats," are now made of a frame of felt or cloth, which is stiffened and shaped with a kind of varnish, and covered with silk plush, but very few being now made of the beaver or other fur.

Fig. 1.—INTERIOR OF HAT FACTORY.



Figs. 2 to 6.—HATS IN DIFFERENT SHAPES.

Aunt Sue's Puzzle-Box.

ELLIPSES.

(Fill the blanks with the same words transposed.)

1. It was a ——— about as large as a ———.
2. The poor boy began to ——— over the tedious ———.
3. He threw a piece of ——— at the ———.
4. I want to go to ——— once ———.
5. He was a ——— of a different ———.
6. That bush has ——— in the ——— place.

METAGRAM.

Entire I am a piece of land; behead me and you will have an animal; restore my head and curtail me and you will see an article of wearing apparel; now behead and reverse me, and (although "beheaded") I am often called the head of the house. FRANK VONDERSMITH.

PI.

Ringenal liwl claucutmea downflulery fi ony dad a tillet veery yad. Od ton tiwa orf a gnol predio fo risueel. Cipk pu het kobo dan niga noe wen adie, fi on rome. Vasc hatt noe, dna dad therano sa noso sa uyo anc.

CHARADES.

1. Two words there are which plainly tell
What you in many a yard may see;
Unite the two and make one word,
A precious stone it then will be.
GILES FARMIN.

2. Willie and Harry did my first,
As they were going to play,
My second's a trifling article,
You use it every day,
My third is good in a rainy time
To wile the hours away;
For my whole you must go to an architect,
And he will explain it all correct. BUNN.

SQUARE WORD.

My first will name some animals,
My next the Christian scorns,
My third a servant you will find,
My fourth have branching horns. NIP.

NUMERICAL ENIGMAS.

1. I am composed of 12 letters:
My 1, 3, 12, 8, 11, 6, is a river in Ireland.
My 4, 2, 7, 9, 5, is a man's name.
My 10, is a vowel.
My whole is a river.

2. I am composed of 11 letters:
My 9, 8, 7, 6, is an animal.
My 11, 5, 10, is a kind of grain.
My 1, 2, 3, 4, is a measure.
My whole is a plant. HERBERT J. K.

DOUBLE CROSS WORD.

My first is in salmon but not in eel,
My next is in onion but not in peel,
My third is in test but not in plan,
My fourth is in host but not in man,
My fifth is in eel but not in ray,
My sixth is in river but not in bay,
Two dear ones you will bring to light,
If you but place the letters right.

SINGLE CROSS WORD.

My first is in sparkle but not in glow,
My next is in high but not in low,
My third is in little but not in small,
My fourth is in top but not in ball,
My fifth is in eel but not in fish,
My sixth is in long but not in wish;
My whole is a quadruped, perhaps in your house,
Though it isn't a rat, nor yet is it a mouse. CARL.

ALPHABETICAL ARITHMETIC.

```
B K T ) C A I H S M ( L M K K
        A B I
        -----
        B L H H
        B B B A
        -------
          I M S
          M T K
          -----
          I B M
          M T K
          -----
            L L
```

J. A. M.

ANAGRAMS.

1. Gained art.
2. H. sips my tea.
3. I marry lean Pat.
4. Get a label.
5. Rose-satin cover.
6. I reach Mat in it.
7. Escort pointer.
8. Tie ten remnants.
9. C. R.—my angel!
10. Inns can lose.

DIAMOND PUZZLE.

The center letters, horizontal and perpendicular, form a state.

1. Part of a yacht. 2. An adverb. 3. A plant. 4. Part of a church. 5. Part of the year. 6. One of the states. 7. One of the Books of the Bible. 8. Flesh of an animal. 9. A tropical tree. 10. To compute. 11. Part of a yacht. SPHINX.

ANSWERS TO PUZZLES IN THE FEBRUARY NUMBER.

ANAGRAMS.—1. Approximate. 2. Transformations. 3. Clairvoyants. 4. Grasshopper. 5. Gingerbread. 6. Exemplarily. 7. Soothsayers. 8. Calumniate. 9. Intolerant. 10. Astrologists.

SQUARE WORDS.—1. WHEN HERE ERST NETS 2. WHOM HARE ORES MESS

CROSS WORD.—The golden rule.

TRANSPOSITION.—Evil, vile, veil, Levi, live.

PI.—The moustache and goatee were first worn in Spain, to distinguish Christians from Moors, this being as nearly the form of the cross as the beard can be cut.

NUMERICAL ENIGMA.—Jack Harkaway.

HOMONYMOUS WORDS.—1. Collar, choler. 2. Complement, compliment. 3. Nave, knave. 4. Hoop, whoop. 5. Sear, seer. 6. Surplice, surplus.

CHARACTERISTIC INITIALS.—1. Felix O. C. Darley. 2. Clara Louise Kellogg. 3. John Burns. 4. Frederick Douglass. 5. Daniel Boone.

CONCEALED PROVERB.—Live and let live.

BISECTED AMERICAN CITIES.—1. Newark. 2. Lowell. 3. Hartford. 4. Portland. 5. Dayton. 6. Camden. 7. Lockport. 8. Smithfield.

ALPHABETICAL ARITHMETIC. — 566)1347646(2381. *Key:* "Wicked boys."

DIAMOND PUZZLE.

```
   Massachusetts.
          M
        R A Y
      C A S E Y
    B R I S T O L
  G U A Y A Q U I L
  K A M T S C H A T K A
M A S S A C H U S E T T S
  S A I N T U R C I Z E
    L O U I S B U R G
      L I B E R I A
        N A T A L
          A T E
            S
```

DOUBLE ACROSTIC.

```
Victoria.

Napoleon.

V— ai —N
I— ndi —A
C— a —P
T—oront—O
O— i —L
R— ag —E
I— dah —O
A— gai —N
```

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.,* and *not* to 245 Broadway.

Let Us All Celebrate.

Every boy and girl who has eyes to read and ears to hear, by this time knows that this is the Centennial year, in which the United States are 100 years old. They have also heard that the particular birth-day, July 4th, will be celebrated everywhere as it has never been before, and that the whole country will honor the year by an Exhibition at Philadelphia, which will be grander than the world has ever before seen, and to which all the rest of the world has been invited. But all the boys and girls can not go to the great show at Philadelphia, and as for the Fourth of July, they celebrate that every year as much as they can. Now, I have a way to propose, by which nearly all of our boys, and girls too, can celebrate the Centennial year in the very best manner. It is simply this, let each one — or each family of children—plant a tree to be known as their *Centennial Tree!* This idea is not mine—I wish it was—but I was reminded of it by a letter of the governor of Michigan to the people of his state, in which he says: "On Saturday, the 15th day of April next, I urge upon every citizen of this state who owns a piece of God's ground—whether it be large or small, whether in city or country, town or village—to plant a tree that our children and our children's children may know and remember as the tree planted by patriotic hands in the first centennial year of the republic." This is to citizens, meaning old folks. I do better than the governor, for I advise the young folks to plant a tree. The 15th of April will be a convenient day for Michigan, but not for Georgia, so I say never mind the day, but plant your Centennial tree on any day, but be sure and plant it. Just think how grand it will be when you get to be men and women, to point out to your children the tree you planted to celebrate the Centennial year when you were young; and when you return after a long absence, for you will not always stay on the old place, no matter what changes there may have been, there will be the dear old Centennial tree to welcome you back. As to the kind of tree, that will depend upon where you live; while some of you will plant an oak or an elm, my youngsters in the Sandwich Islands will no doubt choose a Bread-fruit, and the little Americans in Japan may take a Gingko; you must ask your parents which tree will be best, but you want one that will be sure to grow, and be long-lived, so that your children and grand-children may sit under it at the next Centennial. The idea of Governor Bagley is a capital one, and I am sure you will think that The Doctor has improved upon it. So let all the youngsters who can plant their Centennial Trees.

A Bird "As Red as Fire."

George T. H. says: "Every spring we see in the evergreens, near our house, a bright red bird, which seems very shy. When seen among the dark green leaves of the firs and arbor-vitæs, it looks as red as fire. After a few days it goes away, and is not seen again until next spring. It appears to have a good deal of black about its wings, but it does not keep still long enough for us to get a good look at it. Can you tell from this what it is?"—We think that the bird is most likely the Scarlet Tanager, which other people have noticed was "as red as fire," as "Fire-bird" is one of its common names. However, here is a portrait of the male Scarlet Tanager, and you can tell if it is like your bird or not; only you must know that the picture is only about half the natural size; the body is bright scarlet, and the wings and tail are velvety black. If we could only print his real colors, you would say he was a very gay bird. It is with this as with other birds, the male wears all the fine clothing; if you were to see the hen bird, you would not think she was the mate of such a gay fellow as this, for she wears no scarlet; she contents herself with olive, green, brown, and such modest colors, with a little yellow for variety. Probably the reason that you see them only for a few days in the spring, is that they have just arrived from their winter home in south, and are doing a little house-hunting before they settle. They do not often build near dwellings, but choose a tree in the woods, especially near swamps, and when they have once fixed upon a place, they leave your evergreens, which gave them shelter for a few days, and go to their new home, and are apt to keep out of sight. They make a very poor nest, one that will hardly hold together, of twigs of various kinds, and line it with fine roots and pine-leaves. They are the poorest of house-builders, placing their nest on some out-stretched limb, 15 to 20 feet from the ground, and taking so little pains with it, that nest and eggs are often blown off, and the work has to be done over again. The young birds, both male and female, have the plumage of the mother, and it is only in the second year that the young males wear their gay scarlet coats. The birds live upon both insects and berries. The males have a pleasant song like that of the robin, and both have a different call and alarm note. This bird leaves the north early in September, and it is thought that they pass the winter in Central America.

THE SCARLET TANAGER, OR FIRE BIRD.

An Afternoon's Mischief.

BY LILA V. NORTH.

"Now, Gerty, do you think I can trust you?" asked Mrs. Baldwin, leaning out of the buggy to speak to her little daughter.

But we mustn't let Gerty hear us call her *little*. Why, she was twelve years old, and her teacher said she was the best speller in her class. She could make bread too, and papa called her his housekeeper. Gerty thought she knew almost as much as grown up people.

Mrs. Baldwin was going out with her husband to call on a sick lady, who lived quite a long way off. She expected to be gone all the afternoon, and felt a little anxious about leaving the children, as Bridget was at the village, shopping, and would not be back till dark.

"Do you think I can trust you, dear?" she asked again.

"Why, yes, of course, mamma," answered Gerty, a little impatiently, "I'm sure I can keep Susie and Nan out of mischief, and Robbie always minds me, you know."

"Oh, don't worry wife; I'll trust our housekeeper!" said Mr. Baldwin. "Get up, Toby!"—and away they went down the road.

"Me want to go yidin' too," said little three-year-old Robbie, looking after the buggy with his eyes full of tears.

"No, no, Robbie," said Gerty, "we'll come up in mother's room, and I'll show you pictures. Susie and Nan must come too."

Susie and Nan, the little twin girls, were very willing to come too, and share in whatever fun was going on. Gerty showed them pictures for a while, but they were soon tired, and wanted to "play something."

"Let's play church!" cried Susie, her eyes snapping with mischief. Susie and Nan were five years old, and had been to church a few times, so they knew all about it.

"Well, we will," said Gerty. "I'll be the preacher, and Nan, you and Susie can be the choir. Robbie, you must sit very still and listen."

So Gerty rolled out her mother's sewing machine for a pulpit, and stood behind it very gravely, with Robbie in his little chair, and Pussy on a footstool in front of her for congregation, and the small choir behind.

"We'll sing the *twoth* hymn," said Susie, who thought the giving out of hymns belonged to her.

"Why no, Sue," cried Gerty, "the minister gives out the hymns!" she went on, "we will sing the three-hundredth-and-forty-first hymn:

"Who killed Cock Robin?"
"I," said the Sparrow,
"With my bow and arrow,
I killed Cock Robin."

The choir sang this strange hymn in such a way, that kitty gave a pityful mieow, as though she were sorry she had not been there to eat Cock Robin before he was buried.

Suddenly there was a knock down stairs at the front door, and Gerty left her pulpit and went down to answer it, telling the children to be quiet and good. But Gerty forgot, until she reached the bottom of the stairs, her mother's often repeated charge, not to leave the children alone in her room, without first locking her bureau.

"I'll not be gone a moment," she thought, "and I told them to be quiet."

When she opened the door, who should be there but her best friend, Laura Daly, come to show Gerty her splendid new story-book.

"Come right into the sitting-room; mother's out, and we can have a nice time all by ourselves," said Gerty, seating herself comfortably on the lounge beside her friend, and forgetting all about her little charge upstairs.

Meantime the congregation and choir grew tired of waiting for the preacher. Susie said it wasn't a nice church, because they didn't have hats and things on like mamma, and proposed going to the "buror" to find some. The drawers were pulled open, and Nan seized her mother's shawl, and put her bonnet on wrong side before, while Sue carried off the Marseilles spread to carpet the church with, and Robbie in his hurry to reach the bureau, tripped on a folded sheet, and fell on the floor. Gerty thought of nothing but the new book, until the sound of wheels at the gate brought back her memory. Then she rushed up stairs, to find Robbie cutting a sheet in two for a flag, and Sue and Nan had given the cat a nice new velvet cape to sleep upon, but before she could say a word, her mother was beside her—such confusion! The picture tells the sight which met their eyes. Mrs. Baldwin did not scold Gerty then, but set to work putting things to rights. But that night, when the children were in bed, Mrs. Baldwin had a long talk with her oldest daughter, and Gerty resolved never again to let pleasure tempt her to neglect what she knew was her duty.

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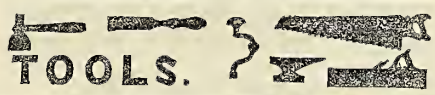

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DOUBLE THE WORK OF COMMON SCOOPS, IF PROPERLY USED.

WITH these Scrapers and man and team, at $3 per day, good roads can be made at less than twenty-five cents per rod, and at a road-making trial at Roberts, Ford Co., Ill., Aug. 11th and 12th, 1875, under the auspices of the State Board of Agriculture, a good road, thirty-nine feet wide, and eighty rods long, was made at less than seventeen cents per rod.

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SCREW STUMP MACHINE.
Safe, Economical, Cheap, and will pull the largest Stump with ease.
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GEO. CHAMBERLAIN & SON, OLEAN, N.Y.

We make the best Blind Ditching and Sub-soil Plows in use. A cheap Farm Wagon we sell from $30 to $50. Cheap Round Trunks, Iron bound. A combined Rocking Chair, Bed Lounge and Trunk. Hanging Clothes Bars, Wooden Bed Springs. Improved Sole Leather Horse Collar Pads. All will be exhibited at the Centennial. Address

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Direct sales to the user. All sales on trial. Freight Prepaid.

No risk to the purchaser, as no money is paid until you are satisfied. The Jones System will bring your goods at lower prices. Will you try it, or continue to sustain monopolies.—For free Price List of Scales address

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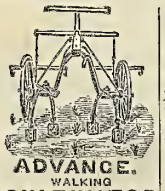

60,000 now in Use.

THE leading Cultivator of this class, which has become a standard implement in all Corn-growing regions, and is fast becoming so for the cultivation of Cotton, and crops of like growth.

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JAMES STILLMAN, Westerly, R. I.
Eggs for Hatching, $2.00 per doz.

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We give particular attention to DIRECT DEALINGS IN GOVERNMENT BONDS AT CURRENT MARKET RATES, and are prepared, at all time, to buy or sell in large or small amounts, to suit all classes of investors. Orders by mail or telegraph will receive careful attention.

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In our BANKING DEPARTMENT we receive deposits and remittances subject to draft, and allow interest, to be credited monthly, on balances averaging, for the month, from $1,000 to $5,000, at the rate of three per cent per annum, and on balances averaging over $5,000, at the rate of four per cent.

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STENCIL DIES For cutting business Stencils, all sizes. Also complete OUTFITS for Clothing Stencils and Key Checks, with which young men are making from $5 to $20 a day. Send for Catalogue and samples to S. M. SPENCER, 347 Washington St., Boston, Mass.

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Agents wanted in every town to sell "**FOWLER'S PATENT LOCK WHIP SOCKET,**" which **holds the whip secure,** and can be instantly locked by a small key, so that **it cannot be lost or stolen.** Smart agents can make handsome wages, securing exclusive control of territory. Send 75c. for sample, which will be forwarded with terms by first mail. Address—FOWLER PAT. WHIP SOCKET CO., Box 1122, New Haven, Conn.

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of the newest and best styles of the John Deere patterns. Send stamp for illustrated circulars to

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ASPARAGUS BUNCHER Illustrated in Feb. No. of *American Agriculturist.*
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We offer the above brand of White Lead to the public with the positive assurance that it is

PERFECTLY PURE.

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POTATOES!
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POTATOES!

☞ NEW, CHOICE, FINE. ☜

Send for our Catalogue, with description, price, &c. Mailed Free.

EARLY ROSE,
EXTRA EARLY VERMONT,
BROWNELL'S BEAUTY,
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SEED GROWERS,
112, 114 and 116 Main St.,
ROCKFORD, ILL.

The Earliest Tomato Known.

THE CONQUEROR.

TEN DAYS EARLIER THAN ANY OTHER VARIETY.

Prof. Thurber, the well known editor of the *American Agriculturist*, says:

"I think it a moderate statement to say the Conqueror was ten days earlier than any other in the Garden. I would also add that in color, shape, and quality, this variety was highly satisfactory."

Messrs. D. M. Ferry & Co., of Detroit, make this statement: "The product of one acre of this variety last season was over **1,000 bushels**, all put into market before most other sorts had begun to ripen."

Price, 25 cts. per packet; 6 packets, $1.00.

THE GOLDEN TROPHY.

A sport of the well-known trophy, and its counterpart in shape, size, and general appearance, of a rich golden yellow color. Letters from our customers in the southern states, who tested this variety last summer, speak of it as the best of all varieties for their section.

25 cts. per packet; 6 packets, $1.00.

NEW SWEET CORN—TRIUMPH.

(A valuable acquisition).

This new and superior variety is the result of ten years of careful cultivation and selection, and is highly endorsed by reliable and prominent parties who have given it a trial. Nothing can surpass it as a market variety.

½ pint Packets 25 cents. Select ears by mail, 30 cents.

Green Prolific Pickling Cucumber.

A new variety now offered for the first time; selected with great care by one of the largest growers of pickling cucumbers in the country; with good culture 200,000 can be grown on one acre.

Packet, 25 cts.; oz., 75 cts.; ¼ lb., $1.75; lb., $5.00.

Bliss's Improved Long Orange Carrot.

This superior variety is the result of a careful selection, for successive years, of the best formed, largest and deepest colored roots of the Imported Long Orange Carrot, by which it has attained a perfection hitherto unknown in this useful vegetable, being larger, better flavored, and of a deeper orange color, and more sure to produce a crop. Butter makers will find this variety very useful in giving to their butter a rich, deep yellow color. We unhesitatingly pronounce it the best variety in the market, and one which will not fail to give satisfaction to the purchaser. One ounce, 15 cts.; four ounces, 40 cts.; one lb., $1 25; by mail, post-paid.

Genuine Wethersfield Onion Seed.

We have received a fine stock of the above from one of the most reliable growers in Wethersfield, which we offer at prices greatly reduced from last year:

	oz.	¼ lb.	lb.
Extra Early Red	$0 30	$1 00	$3 00
Early Red	25	75	2 50
Wethersfield Large Red	20	60	2 00
Danvers Yellow	25	75	2 50
Yellow Dutch	25	75	2 50
White Portugal	30	1 00	3 00
Early Cracker	30	1 00	3 00
Early Red Globe	30	1 00	3 00
Southport Red Globe	30	1 00	3 00
Southport White Globe	30	1 00	3 00
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Alfalfa or Chilian Clover.

The great forage plant of California, and equally adapted for culture east of the Rocky Mountains. By mail, post-paid, 60 cts. per lb. Prices for larger quantities will be given upon application. Twenty-five pounds will sow an acre.

Lawn Grass Seed.

By the use of our improved mixture a beautiful Lawn may be made in a very short time. For preparing a Lawn, and subsequent management, see our Seed Catalogue.

Packages of one qt., 30c., mailed to any address, post-paid. By express, per peck, $1 50; per bushel, $5.

B. K. BLISS & SONS,
34 Barclay St., New York.

$500 to be divided among the six most successful growers who shall produce the largest quantity from 1 lb. of **RUBY** and **ALPHA** potatoes. Price of each, $1 per lb.

CENTENNIAL PREMIUMS.

$150 to be awarded for the best collection, one peck each, of potatoes introduced by us since 1867.

$50 for the best and most promising seedlings raised this year from **Pringles Hybridized Potato Seed.** Packets of 25 seeds, 50 cts.

The collections for which the last two premiums of $200 are offered will be exhibited at the Centennial Exhibition, in Philadelphia, in October and premiums will be awarded by their committee. For conditions and full particulars send for our Potato Premium Circular, mailed free to all.

Bliss's Illustrated Seed Catalogue and Amateur's Guide to the Flower and Kitchen Garden, contains a descriptive list of 2500 varieties of Garden, Field and Flower Seeds, with explicit directions for culture, 200 pages, several hundred engravings, and a beautifully colored lithograph. Sent postpaid, for 35 cents.

Bliss's Gardener's Almanac and *Abridged Catalogue of Garden, Field and Flower Seeds.* 116 pages, beautifully illustrated, mailed to all applicants inclosing 10 cts.

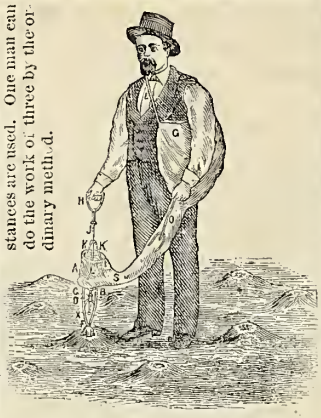
Bliss's Illustrated Potato Catalogue contains a descriptive list of all the new varieties recently introduced, with many other desirable sorts, also much useful information upon their cultivation. 32 pages, 10 cents.

B. K. BLISS & SONS,
P.O. Box No. 5712. 34 Barclay St., N.Y.

Randolph's Fertilizer Distributor.

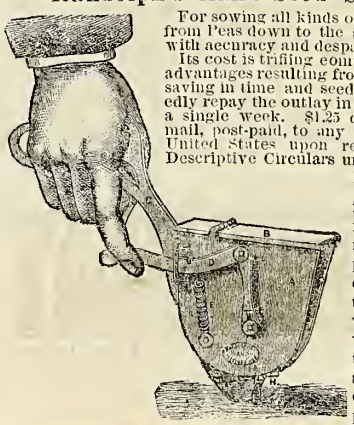
Something that no Farmer can afford to be without.

For distributing all kinds of concentrated fertilizers—as Phosphates, Guano, Ashes, Plaster, or Chemical Manures—without touching the material with the hands; a matter of some importance when caustic substances are used. One man can do the work of three by the ordinary method.



For a full description and directions for use, send for Circular, which will be mailed free to all applicants. **Price, $5.** A liberal discount to the trade and traveling agents.

Randolph's Hand Seed Sower.



For sowing all kinds of Garden Seeds, from Peas down to the smallest Seeds, with accuracy and despatch.

Its cost is trifling compared with the advantages resulting from its use. The saving in time and seeds will undoubtedly repay the outlay in the planting of a single week. $1.25 each. Sent by mail, post-paid, to any address in the United States upon receipt of $1.50. Descriptive Circulars mailed to all applicants.

In order to introduce this useful implement, we will present one to each of our customers who will order $5 worth of vegetable or flower seeds at our catalogue prices.

Address **B. K. BLISS & SONS,**
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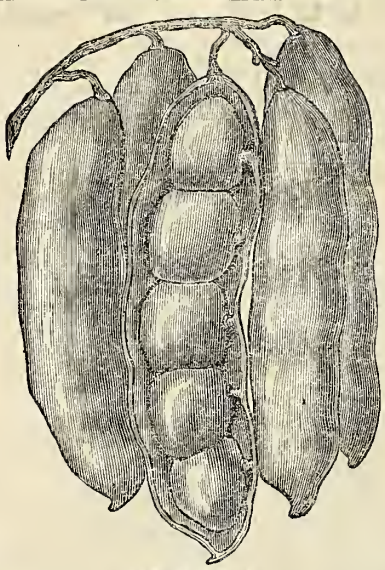

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IMPROVED LIMA BEAN.

The distinctive features of this sort are early maturity, prolificness, and extra quality of bean, containing more saccharine matter and producing one-third more shelled beans to the pole than the Large Lima, while the shelling becomes an easy matter, from the fact of the pods being entirely full of beans, forming one against the other like peas in a pod.

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Price, $1.00 per pint.

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The Earliest Potato Known.

ALPHA.

A very early variety for farm and garden culture; fit for the table ten or fifteen days before the Early Rose. Of medium size; flesh very white, fine-grained, dry, and of excellent flavor; quality of the highest excellence. A first-class certificate was awarded by the Royal Horticultural Society, of London, in 1874. A silver medal was also awarded by the Massachusetts Horticultural Society.

Per pound $1.00; 3 pounds to one address, $2.50, by mail, prepaid. By express or freight, charges paid by the purchaser, ½ peck, $2.00; 1 peck, $3.00; ½ bushel, $5.00; 1 bushel, $9.00; 1 barrel, $20.00.

$250 will be paid in premiums to the six persons growing the largest quantity from one pound. For conditions and full particulars send for our Potato Premium Circular, mailed free to all.

Address **B. K. BLISS & SONS,**
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SNOWFLAKE.

One of the best and most productive Potatoes ever introduced.
1,417 *lbs.* (23 6-10 *bushels*) *raised from one pound of seed.*

This variety, first sent out by us in the Spring of 1873, has been thoroughly tested, both in this country and in Europe, the past two seasons, and we have yet to learn of the first instance where it has failed to give entire satisfaction.

The Committee who awarded the premiums offered by us last spring, report as follows:

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A few barrels of small size potatoes for sale by the barrel only, at $5.00 per barrel.

B. K. BLISS & SONS,
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Tailby's Hybrid Cucumber.

This combines in itself the best qualities of the English Frame and the White Spine.

IS REMARKABLY PROLIFIC,

as Handsome as a Picture, and in brief, any man who plants it side by side with the best varieties he raises,

WILL FIND IT AN ACQUISITION.

Per Package, 15 cents.

JAMES J. H. GREGORY,
Marblehead, Mass.

WE OFFER

the following Superior **CABBAGE SEEDS.**

SHADY LAKE

SILVER-LEAF DRUMHEAD. (*Original Stock.*) The best cabbage for a late crop. Per packet, 25c.; per ounce, $1; per lb., $10.00.

RED DRUMHEAD (Late). Per packet, 25c.; per ounce, $2; per lb., $20.00.

VAN WICKLEN LATE FLAT DUTCH. Per packet, 15c.; per ounce, 75c.; per lb., $10.00.

R. H. ALLEN & CO.,
189 & 191 Water St., New York.

COLD FRAME PLANTS 200,000 Early Wakefield Cabbage Plants, 75 cents per 100; $6.00 per 1,000; packed so as to keep a week, and shipped by Express anywhere. All kinds of vegetable plants in season.
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WINTERED JERSEY WAKEFIELD.—For sale by JOHN B. SMITH, East Hartford, Ct.

Vegetable Plants, Roots, and Seeds,

To Farmers and Market Gardeners at very low rates.
Send for Special Price List.

Peter Henderson & Co.
35 Cortlandt Street,
NEW YORK.

CHOICE NEW CROP ONION SEED.

We will send by mail our **New Crop Choice Wethersfield Large Red Onion Seed**.....at $2.00 per lb.
Medium Early Red Globe..... " 2.50 "
Extra Early Flat Red, earliest sort..... " 3.50 "
Yellow Globe Danvers, Superior Stock..... " 2.50 "
Yellow Danvers, Good Stock..... " 2.00 "
White Globe and Silverskin..... " 3.50 "

Remittances may be made in Registered Letters, Post-Office Money Orders, or Draft on New York, or by Express, at my risk. For smaller quantities and complete list of Vegetable and Farm Seeds, send for our **ANNUAL SEED CATALOGUE,** free to all. The Onion Seed we offer is of the very best Quality.

R. D. HAWLEY, Seedsman,
492 & 498 Main St., Hartford, Conn.

Yellow Danvers Onion.

Grown from selected stock. By mail, $2.00 per pound. Seed Catalogue on application.

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532 Main St., and 67 Chippewa St.,
BUFFALO, N. Y.

Seed Time Cometh!

Our twenty-third edition of the **Flower and Kitchen Garden Directory, Illustrated, for 1876,** will soon be published, embracing a complete List of the BEST STANDARD BOSTON MARKET VARIETIES of **Vegetable Seeds,** and the most beautiful of **Flower Seeds,** and other **Horticultural Requisites;** it will be sent free to all former customers, and others, on application.

D. T. CURTIS & CO., 161 Tremont Street, Boston, Mass. *Successors to Curtis & Cobb.*

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FOR GARDEN & FIELDS,
RELIABLE AND TRUE. Send to
TOLEDO SEED HOUSE,
AUGUSTUS B. TABER, Toledo, O.

SEEDS.—White Japan Muskmelon, per package 10c.; Casaba Muskmelon, 15c. Trophy Tomato, 20c.; Conqueror Tomato, 25c. Early Concord Corn, 15c.; Mammoth Field Corn, 15c. The lot for 90 cents by mail, post-paid. **Cash with all orders.** Address
OTIS TINKHAM, Campello, Plymouth Co., Mass.

SEEDS.

GARDEN, FLOWER & FIELD SEEDS,
reliable, fresh and pure, at reasonable prices.
(ESTABLISHED 1839.)
B. H. STAIR & CO.,
Cleveland Seed Store, Cleveland, Ohio.

R. H. HAINES will send free to all applicants his new descriptive price lists of **Hudson River Fruit Gardens.** Many new Strawberries, Raspberries, Grapes, &c., &c. Also **Berry Baskets** in great variety. See page 113 in March No.
Address R. H. HAINES,
Malden-on-Hudson, N. Y.

CHOICE VEGETABLES.

Most of the following I originally introduced to the public, some of them for the first time this season.

Quaker Sweet Corn (the sweetest of all the white varieties). Marblehead Dutch Cabbage (head rounder, harder and handsomer than common kind). Mexican Sweet Corn (the sweetest and tenderest of all). Marblehead Mammoth Sweet Corn (the largest variety in the United States). Russian Netted Cucumber (differs in hardiness and color from the others). Tailby's Hybrid (a magnificent cross between English Frame and White Spine). Bonnet Gourd (vine and fruit are very striking). Sill's Melon (sweet, spicy, delicious). Queen Onion (earliest of all varieties). Mammoth Tripoli (a mammoth variety). Emerald Gem Pea (the best dwarf for family use). Butman Squash (new; the only squash of American origin; first-class every way). Paragon Tomato (the best of the thick varieties). Canada Victor (decidedly the best early tomato grown). White Pea Bean (as round as a shot, differs from all other pea beans). **Each of the above at 15 cts. a package.**—Fern-leaved Parsley (resembles a beautiful Moss). Crane's New Wyman Cabbage (the most solid variety of the Early Wyman). Marblehead Mammoth Cabbage (the largest variety in the world, sometimes weighs 60 pounds). Norbiton Giant Cucumber (grows as long as a barrel is high). Hardy Ridge Melon (the flesh is as thick again as any other melon, very large, very hardy, delicious). **Each of the preceding 25 cts. a package.**—Snake Cucumber (grows six feet, often curled, and strikingly resembles a snake), 20 cts. a package.—**THE THREE BEST NEW SEEDLING POTATOES,** for yield, handsome form, quality, and general traits that the market wants, in my experience, tested side by side with all the new varieties, are **Early Ohio** for early, and **Burbank** and **Dunmore** for late. Sent to any address at $1 00 each per pound; for larger quantities, see my Catalogue, which contains quotations of an immense variety of vegetable seed, and will be sent **Free** to any address.

JAMES J. H. GREGORY, Marblehead, Mass.

CENTENNIAL SWEET CORN.

Market gardeners, that have given it a trial, recommend it as being the earliest and most profitable sweet corn they have ever grown. And its quality is attested by all that have given it a trial.

Packages with seed for 20 to 25 hills, sent post-paid, for 25 cts. 5 for $1.00. Also extra large late sweet corn at the same rates.
A. L. CLARK & SON,
East Hampton, Hampshire Co., Mass.

The Duncan Strawberry,

The most profitable, and we believe the best of the new kinds. 1 doz. plants by mail, $1. Try it. Other kinds at low Rates.

HIGHLAND HARDY and BRANDYWINE

are the best and most promising Raspberries.

EARLY OHIO—the earliest Potato, two weeks ahead of Early Vermont. 3 lbs. by mail, $2.
E. & J. C. WILLIAMS, Montclair, N. J.

THE DUCHESS,

The Earliest Strawberry.

Large, solid, profitable, hardy, and of the best quality. 50 cents per plant, $2 for six, $3 per dozen. For descriptive price-list of every desirable variety of Small Fruits, Potatoes, and Garden Seeds. Address
F. M. HEXAMER,
New Castle, Westchester Co., N. Y.
[Successor to Reisig & Hexamer].

STRAWBERRY PLANTS,

By the 100, 1,000, 10,000, or 100,000.

MONARCH OF THE WEST, COL. CHENEY, WILSON'S ALBANY, Seth Boyden, Chas. Downing, Downer, Triomphe de Gand, Kentucky. Also **STAR OF THE WEST, Champion, Dr. Warder, Late Prolific, Black Defiance, Agriculturist, Lenning's White,** and others.

A. HANCE & SON,
Nurserymen and Florists, Red Bank, N. J.

C. Downing Strawberries, $2.50 per M. Monarch of the West, in quantities, $5.00 per M. Raspberries, Blackberries, Asparagus roots, etc., at correspondingly low rates. **S. C. De COU,**
Moorestown, Burlington Co., N. J.

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Plants and other small fruits mailed or expressed to all parts of the country at very reasonable prices. Send for price list. Address **E. P. ROE,**
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THE DOLLAR NURSERY.
35 Acres in Small Fruit Plants of any variety at *Bottom Prices.*
100 to 300 Strawberry Plants for 1 Dollar.
35 " 100 Raspberry " " 1 "
30 " 50 Blackberry " " 1 "
10 " 15 Grape Vines " 1 "
Send for Catalogue. LAPHAM & ANTHONY, Clayton, Del.

STAR OF THE WEST, the best Strawberry.—**Delaware,** the largest and best Hardy Red Raspberry. Millions of Trees and Plants at **Pomona Nursery.** Send for Circulars. WM. PARRY, Cinnaminson, N. J.

NEW STRAWBERRIES, Cumberland and Springdale. Possessing more merits than any new variety now before the Public. Send for Descriptive Circular.
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Small Fruits, Grapes, Currants, Raspberries, &c.
Ornamental Trees & Shrubs, deciduous & evergreen.
Roses a specialty—all the finest sorts.
Green & Hot House Plants, including best novelties.
Small parcels forwarded by mail when desired.
Prompt attention given to all orders and enquiries.
Descriptive and Illustrated priced Catalogues sent prepaid on receipt of stamps, as follows:
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No. **2.** Ornamental Trees, with col'd plate of Roses, **25c.**
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No. **5.** **List** of **New Roses** for 1876, **Free.**
Address
ELLWANGER & BARRY, Rochester, N. Y.

TREES AND SHRUBS

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FLUSHING, near NEW YORK,

Including also **Rhododendrons, Azaleas,** Magnolias, Choice **Evergreens,** Purple Beech, **Clematis** of superb sorts. **Roses** by 12 and by 1,000.
For Catalogue address P. O. Box 99.

R. B. PARSONS & CO.

HIGHLAND HARDY.

The **most profitable** market **Raspberry** grown. Produced last season over **$1,000** worth of fruit to the acre. It bears enormous crops, and is the earliest of all.—"I regard the Highland Hardy as one of the most promising raspberries grown. It is the *earliest* that I have seen, and is perfectly hardy."—*Rev. E. P. Roe,* author of "Play and Profit in my Garden," etc.

Price by mail, post-paid: 75 cts. per doz.—$3.50 per 100. | By express: $3 per 100—$15 per 1,000.

FRUIT TREES!! SHRUBS!! VINES!! ROSES! GREENHOUSE STOCK!

20,000 surplus and very fine American Arbor Vitæ, 3 to 6 ft., twice transp., very cheap.—**1,000,000** Am. Arb. seedlings.—**Downing Gooseberry,** best Am. gooseberry; per doz., $2.50, post-paid. See our seed adv. in another column. Send for catalogue.
Established 1863. **W. L. FERRIS, Jr., & CO.,**
Dutchess Nurseries. **Poughkeepsie, N. Y.**

TREES 400,000 Fruit, 250,000 Evergreens, 500,000 Greenhouse, Bedding Plants, &c.
Our Catalogues Free. 22d Year. 400 Acres. 13 Greenhouses.
STORRS, HARRISON & CO., PAINESVILLE, OHIO.

Evergreens and Larches.

LARGEST STOCK IN AMERICA.
ALL NURSERY GROWN.

Also **Evergreen** and **European Larch Seeds.**
Send for Catalogue.
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FIVE SPLENDID VARIETIES, each kind labeled, $1, 12 do. $2, 19 do. $3, 26 do. $4, 35 do. $5.
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Send for our **NEW GUIDE TO ROSE CULTURE,** and select for yourself from over 300 finest sorts. We are the *largest Rose-Growers* in America, and the *only ones* allowing purchasers to make *their own selections.* **Satisfaction guaranteed.** Address
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Over 500 Varieties grown in quantity on their own roots, including all the newest and choicest varieties. Catalogue sent on receipt of 3-cent postage stamp. Also—Greenhouse and Bedding Plants in quantity. Send for Catalogue to
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Fine Stock at Low Figures. ☞ Catalogue FREE.
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Our Stock of BULBS this year is of very superior quality.

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1st quality large Flowering Bulbs.....	$ 75	$4.00	$30.00
2d quality " "	50	3.00	20.00
A few hundred *extra* large Bulbs.....	1.00	5.00	

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Send by Mail 10 Extra Choice Varieties for $1.00, and Three Fine Album Chromos or a Choice Lilium. Buyer's Choice. 2 Sample Plants, Chromos, or Lilium sent for 25 cts.
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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 128.

Poultry Keeping.—"C. H.," Lawrence, Mass. The Light Brahmas are the fowls most generally useful, though there are others better for special purposes. The White Leghorns are the best for eggs, the Brown Leghorns for early chickens, but for eggs, chickens, heavy mature birds, and ease of keeping, we prefer the Light Brahmas, or a cross of these on common stock. No one can expect to succeed in making poultry keeping profitable, unless he gives his own attention to it. It will not pay to employ hired help.

Horses and Cows in the Same Stable.—"G. H. S.," Havana, Ill. It is not at all injurious to either to have cows and horses in the same stable. The idea to the contrary may have arisen through some ill effect by reason of the usually filthy condition in which cow-stalls are kept, and if the horse stalls are not kept sweet and clean, the milk would certainly suffer in quality in consequence. Milk readily absorbs bad odors, and the eyes of animals as well as their lungs suffer from foul air, charged with ammoniacal vapors. Unless the stables are kept very clean, we would prefer to have the different animals separate, but if cleanliness and purity of air are secured, the whole of the stock may be housed together.

Which Breed of Pigs?—"L. W. S.," Frederic Co., Va.—The breeds which are now popular in various localities, are the Poland-China, the Chester White, and the Berkshire, for packing in the west; the Suffolk and the Yorkshire, (white pigs), in the east for "pork pigs," the Berkshire for bacon and hams everywhere; the Essex for crossing and improving poor races; some local races, (as the Jersey reds), are in favor in certain places. The names of breeders who we have reason to believe are trustworthy, will be found in the advertising columns.

Why is Land Cheap in some Places?—"L. W. G.," Cleveland, Ohio. It surprises some, as it does you, that land in some parts of Maryland should be offered at less prices, than it can be bought for in the west. But it should be considered that many things go to make up the value of land. Fertility, healthfulness of climate, good water, good roads, nearness to market, schools, low taxes, and social advantages all help to fix the value of land. Rich land is worth little in a climate where a farmer can not enjoy health, or have his children go to school, or where his family have no agreeable society. We know of no place in the country where all these advantages are to be enjoyed, in which farms go a begging at $10 an acre, or even much more than that. There are many places in Maryland, and other southern states, where people own too much land, and are "land poor;" the land is good, the climate favorable, and the land is cheap. But in such places the very fact that land has been held in large farms, is a sufficient reason for a scarcity of neighbors, and of schools. Those who do not care for these, can find plenty of cheap farms. It is population that makes good land high in price, and *vice versa.*

Poultry Wanted.—The many persons who have inquired about poultry, are informed that we have neither birds nor eggs for sale, and that we do not sell poultry, *or any other stock.* Those who have poultry for sale, will probably soon make it known in our advertising columns in the usual way. When we figure and describe various breeds of poultry, and other animals, it is solely for the information of our readers, as we are not interested directly or indirectly, in the sale of anything of the kind. Dealers are very unwise that they do not advertise more generally; we have for the past two months averaged full five letters daily, asking *where* particular breeds of fowls, ducks, pigs, sheep, etc., may be had.

How to Use Dynamite.—"J. F. G. L.," Academia, Pa. The method of using dynamite or giant powder in clearing land, was explained in the *American Agriculturist* of Oct., 1875. It should be used with caution, as it is eight times as powerful as gunpowder, and even more, under some conditions. No one should attempt to use it, until instructed by some experienced person, or unless having sufficient experience with powder, to handle explosives in a proper manner.

"Science Applied to Farming," Correspondence.

ARTIFICIAL FERTILIZERS.—"J. C. H.," Queens Co., N. Y., will find analyses of fertilizers, with explanations in Tables 26-29, on page 130. What particular sort of fertilizer is best for your soils you will best learn from experience. Peruvian guanos furnish nitrogen, phosphoric, and a little potash, and in a very available form; their action is quick and "stimulating." Bone manures furnish nitrogen and phosphoric acid, and are slower in their action. Specimen 3 in the tables is better than the average of "ammoniated phosphates," which contain nitrogen, phosphoric acid, and sometimes potash, and generally rank between guano and bone in availability.

GROUND BONE.—"L. H. M.," Ohio. The better grades of ground bone contain from 20 to 25 per cent phosphoric acid, and from 3½ to 4 per cent of nitrogen. But the bone-meal and bone-dust of our markets often contain much less of these ingredients, even when unadulterated. Boiled and steamed bone are more valuable than raw bone, because they are more easily pulverized, and their nitrogen and phosphoric acid are more quickly available.

NITRATE OF SODA AND SULPH. AMMONIA.—"R. K.," Conn., and others. Nitrate of soda and sulphate of ammonia both contain nitrogen in the most available forms. A good quality of nitrate of soda will yield about 15.5 per cent of nitrogen. A good quality of sulphate of ammonia will yield 20 per cent of nitrogen. Both these articles are much used as fertilizers. The leading manufacturers, who ought to know what are the best sources of nitrogen, use fish and animal refuse, in compounding fertilizers.

CONN. FERTILIZER LAW.—"J. C. W.," Md. The Connecticut law requires that all packages of 50 lbs. or over of commercial fertilizers sold at one cent per pound or more, shall be accompanied by address of manufacturer, seller, and an analysis. By an odd coincidence, on the same day your letter came, we had a visit from a heavy dealer in fertilizers in your own state, who, failing to induce our Station to approve a fertilizer of doubtful chemical character which he was selling, boasted that in his section of the country the legal restraints upon the sale of fertilizers were being removed.

FERTILIZER CONTROL SYSTEM.—"G. B.," Md. How the fertilizer law is supplemented by the work of the Experiment Station in Connecticut, may be inferred from the following agreement, which has already been signed by nearly all the leading manufacturers and dealers in the state, and by a number in other states, whose wares are sold here:

I.—I (or we) [name] hereby agree with the Connecticut Agricultural Experiment Station, as represented by its Director, that all fertilizers offered for sale in the State of Connecticut, by myself or by my authorized agents, at any price above fifteen dollars ($15.00) per ton, except crude fish-scrap, shall be placed under its supervision in the following manner:

I.—I [or we] hereby agree that all fertilizers above described shall be guaranteed to contain certain minimum percentages of one or more of the following ingredients: Nitrogen....Phosphoric Acid, *Soluble*.....Phosphoric Acid, *Reverted*....Phosphoric Acid, *Insoluble*.....Potash.....Sulphuric Acid.....Chlorine.

II.—I also agree that the above guarantee shall be always subject to verification by analyses made at the Station.

III.—I also agree that all fertilizers above described shall be at all times open to the inspection of the Station, as represented by its Director, Chemists, or any member of its Advisory Committee.

Date ..... Signed,.....

The form of agreement contains also a note, defining the terms "Phosphoric Acid," "Soluble," "Insoluble," etc., and giving other chemical explanations. Since the value of ordinary commercial fertilizers is determined chiefly by the amounts of these ingredients, the agreement binds the signer simply "to state what he sells, and to sell what he states"—the verification of the statement being left to the official analysis of the Station.—— In several other states the regulation of the trade in commercial fertilizers is sought in laws, requiring wares to be sold by analysis, and in the appointment of inspectors of fertilizers, whose duty it is to examine wares sold. The Connecticut system, (which is essentially the same as is commonly adopted in Germany, and other parts of Europe), goes a step further, and provides means whereby individual consumers may have the composition of their wares guaranteed, and the guarantee verified at little or no expense by the State Station.

GERMAN FARMERS' CALENDAR.—A number of persons inquire concerning the German Farmers' Calendar, frequently referred to in "Science Applied to Farming." The work is entitled "*Landwirthschaftlicher Kalender, von Mentzel und v. Lengerke*," (Agricultural Calendar, by Mentzel and von Lengerke). It is published annually in Berlin, in two volumes, each about six inches long, and four wide. Volume I. forms a pocket diary, containing, besides the usual calendar and diary blanks, a series of forms and blanks for farm accounts, and a lot of other useful matter, with some forty tables, giving an immense amount of useful practical information, in a form so concise and clear, that any farmer may avail himself of it with no difficulty whatever. For instance, one table gives the chemical compositions and nutritive value of not far from 200 different fodder materials. Following this is a table for calculating how to mix these in feeding various animals. Tables of fodder rations are also given in some of the annual volumes. Another table gives the composition of various plants, and still another of fertilizers, thus enabling the German farmer to keep an account with his land, and determine how much material is removed with the crops, and supplied with manure. And if he is purchasing a fertilizer, he has only to refer to his diary to learn how much of nitrogen, or phosphoric acid, or potash it ought to contain, and how much it ought to cost. He may even find a concise statement of the relative merits of different agricultural implements. If he thinks of buying a mowing machine, a reaper, or a hay-tedder, he can see at a glance what is the cost, how many men and horses will be required, and how much work may be done per day, by any of the better American or European machines, from Wood's or the Clipper mower, to the Hohenheim seed-drill.—Volume II. is entitled "*Landwirthschaftliches Jahrbuch*," (Agricultural Year-Book), and is filled with accounts of progress in agricultural science, and other matter of interest to intelligent German farmers.—I most heartily recommend every farmer who has any knowledge of the German language, to purchase these books. They cost in Berlin 2¼ to 4 Mark, (60 to 97 cents, gold), and may be ordered through any large bookseller.

Catalogues Received.

A number of our business friends were no doubt disappointed at not finding their catalogues acknowledged in last month's *American Agriculturist*. The omissions were largely due to being too late, as on the very day of going to press, a number of important catalogues came to hand, and a notice impossible; none reaching us after the 10th of the preceding month are likely to be acknowledged. Some were not in the list because we did not choose to put them there, and we wish it to be distinctly understood that these announcements are solely for the benefit of our readers and ourselves; if the dealers derive any good from them it is their gain; we wish our readers to know what is offered, and by whom, and to save ourselves the sometimes overwhelming number of inquiries as to where this, that, or the other seed, tree, plant, or other thing can be bad. These inquiries have notably decreased since we began to publish the lists, and we have no doubt that our readers find many of their questions answered, and often anticipated. We by no means agree to acknowledge every catalogue that may be sent, as there are some—we are happy to say not many—who cannot get their names before the public through our agency in this or any other part of the paper.

NURSERYMEN.

Many nurseries have also a department for greenhouse and other flowers. Where these issue a separate catalogue of flowering plants, it is given under "Florists."

GEORGE ACHELIS, Westchester, Pa., succeeds Otto & Achelis, and sends his wholesale list of fruit and ornamental trees, etc.

BRONSON, HOPKINS & Co., Geneva, N. Y., send their wholesale price-list, which includes a general stock with several specialties.

HARVEY CURTIS, Owego, N. Y., offers general nursery stock and root grafts.

JOHN S. COLLINS, Moorestown, N. J., has at the Pleasant Valley Nursery, all the leading small fruits and peach trees.

SAMUEL C. DECOU, Moorestown, N. J., has a general assortment of fruits, with small fruits as a specialty.

DOWNER & BRO., Fairview, Ky., continue the business so reputably established by their late father, and offer a large stock of fruit and ornamental trees.

FARLEY, ANDERSON & Co., Union Springs, N. Y., offer a large stock in their wholesale list.

W. L. FERRIS, JR., & Co., Poughkeepsie, N. Y., send both a wholesale and retail list; besides nursery stock they have a greenhouse and seed department.

GOULD NURSERY Co., Beaver Dam, Wis., make a specialty of "iron clad," or hardy fruits. They have a separate list of "Centennial Trees" for planting to commemorate the year—good!

A. HANCE & SON, Red Bank, N. J., send a wholesale trade-list, and one of specialties, including the Honeywell peach.

E. W. HARRINGTON, Palmyra, N. Y., has an illustrated catalogue which, besides being a price-list, contains interesting reading.

HEIKES NURSERY Co., Dayton, O., sends a trade-list, including the Amsden peach among other specialties.

T. S. HUBBARD, Fredonia, N. Y., offers the usual large assortment of grape-vines, with general nursery stock.

KNOX FRUIT FARM Co., Pittsburgh, Pa., offer a large variety of small and other fruits, with flowers, etc.

THOMAS MEEHAN, Germantown, Pa. A wholesale list of a stock which in immense variety is rarely equalled.

WILLIAM H. MOON, Morrisville, Pa., has in one catalogue his nursery stock and greenhouse plants.

RANDOLPH PETERS, Wilmington, Del., has at his "Great Northern and Southern Nursery," a general stock; peaches a specialty, with several new sorts.

F. K. PHOENIX, Bloomington, Ill., appeals to people to "Organize! Form Clubs, and buy at wholesale," and sends out a catalogue to show how to do it.

STORRS, HARRISON & Co., Painesville, O. A full nursery list, with flowering plants and bulbs; as heretofore, young Chestnut trees are a specialty with them.

SEEDSMEN.

R. H. ALLEN & Co., 189 and 191 Water street, N. Y. This important catalogue is one of those which came just too late last month. It is very full, especially in grass, grain, and other agricultural seeds.

D. T. CURTIS & Co., Boston, Mass., issue catalogues for vegetable and flower seeds separately, and give instructions for sowing and cultivating.

DETROIT SEED COMPANY, Detroit, Mich., in their "Vegetable and Flower Guide," have a very full and abundantly illustrated catalogue.

HOVEY & COMPANY, Chicago, Ill., offer vegetable and flower seed.

A. N. JONES, Le Roy, N. Y., offers several potatoes not generally in the market.

KNOX FRUIT FARM Co., Pittsburgh, Pa., in addition to the Fruit Farm, carry on the seed business in the city, and offer a general stock.

THOMAS MEEHAN, Germantown, Pa. Forest tree, shrub and fruit tree seeds in a separate catalogue; especially full in American kinds.

E. A. REEVES, 58 Cortlandt street, N. Y. Besides a large variety of vegetable, flower, and agricultural seeds, offer a select list of fruit and ornamental trees.

SCHLEGEL, EVERETT & Co., Boston, Mass. An exceedingly compact catalogue of vegetable and flower seeds, with numerous novelties.

J. M. THORBURN & Co., 15 John street, N. Y. Evergreen and deciduous tree and shrub seeds. This is distinct from the other catalogues of this house, and when written for should be specified.

YOUNG & ELLIOTT, No. 12 Cortlandt street, N. Y. The usual vegetable and flower seeds, with the novelties and all horticultural requisites.

W. H. REID, Rochester, N. Y., under the name of "Floral Tribute," issues his catalogue of flower and vegetable seeds.

DAVID R. WOOD, Morrisville, Vt., offers vegetable seeds and seed potatoes.

FLORISTS.

Including the catalogues of those nurseries which have a separate one for their flower department.

WM. BENNETT & SONS, Pittsburgh, Pa., have a compact catalogue of bedding plants, with a list of seeds.

W. H. BURLEIGH, Plainfield, Conn. Also vegetable plants. Offers special terms to clubs.

PAUL BUTZ, New Castle, Pa. A full and illustrated catalogue of greenhouse plants, with ornamental trees and small fruits.

THE GOULD NURSERY Co., Beaver Dam, Wis., besides their tree catalogue, send a separate one for greenhouse plants, roses, etc.

HOOPES BROTHER & THOMAS, Westchester, Pa. Their flower catalogue is as full as those for the fruit and ornamental departments, showing a fine collection.

W. F. MASSEY & Co., Chestertown, Md. A general stock, with liberal dollar collections by mail.

J. T. PHILLIPS, West Grove, Pa., makes a specialty of sending plants by mail.

F. K. PHOENIX, Bloomington, Ill., has immense greenhouses, as well as an immense nursery, and full of new and standard old plants.

H. S. RUPP, Shiremanstown, Pa., sends his "Centennial" mail catalogue of flowers, small fruits, and vegetable plants.

JOHN SAUL, Washington, D. C., is always abreast with the novelties in all departments, and in his greenhouse stock, has as usual many choice plants.

SKED, PADDOCK & Co., Cleveland, O., have a choice collection, with many new geraniums.

GEORGE SUCH, South Amboy, N. J. A general catalogue, with large lists of Hybrid Gladiolus, and Cannas. The same completeness and exquisite neatness which mark his catalogue of Palms, Ferns, etc., are found here.

JAMES VICK, Rochester, N. Y., sends his Floral Guide No. 2. Last month we said no one could foretell what Mr. Vick would do next, and now he surprises us by a full list of greenhouse and bedding plants. A useful treatise on sowing seeds in a hot-bed, notes on novelties, other good matter, and a reproduction of the article in the "Illustrated Christian Weekly," with its beautiful engravings illustrating the operations of Mr. V's seed-farms, noticed last month, are included in this number. These pictures are no doubt very truthful; one especially, which shows two men hard at work, while another is just starting in a boat to go a fishing. We have our opinion as to who this one is.

LAND CATALOGUES.

D. J. BLACKISTON, Chestertown, Md., sends a catalogue of the Maryland and Delaware Farms he has for sale. A more delightful region than that in which he lives need not be sought for, and being a large and ex-

perienced grower of fruit, he knows the capabilities of the vicinity.

CHAFFIN, STAPLES & Co., Richmond, Va., have a long catalogue of lands in various parts of Virginia.

WM. P. MOORE & Co., Suffolk, Nansemond Co., Va., have also numerous farms, some very cheap.

CHAS. E. SHANAHAN, Easton, Talbot Co., Md., has an attractive list of farms for sale, and information about that part of the state.

IMPLEMENTS.

CHICAGO SCRAPER AND DITCHER Co., Chicago, Ill., describe their excavator for road-making, ditching, and leveling land.

CHAS. D. PIERCE, Peru, Ill., makes what he claims to be the best well auger in use.

RUMSEY & Co., Seneca Falls. A large, well illustrated catalogue of an immense variety of pumps, fire engines, mills, bells, etc.

TOWANDA EUREKA MOWER Co., Towanda, Pa., make the Eureka Direct Draft Mower.

WARRIOR MOWER Co., Little Falls, N. Y., make one of the standard and established mowing machines.

G. B. WEEKS & Co., Syracuse, N. Y. Chapman's Railway Hay and Straw Pitching and Stacking Apparatus. First prize at the New York State Fair.

MISCELLANEOUS AND POULTRY.

BEECHER BASKET Co., Westville, Conn. A great variety of the popular Beecher baskets and crates.

W. A. BURPEE, Philadelphia. Land and water poultry, Southdown sheep, Jersey, Guernsey, and Short-horn cattle, and shepherd dogs.

A. H. HEWS & Co., North Cambridge, Mass., produces excellent flower-pots and other horticultural pottery of excellent quality, as we know by experience.

NOVELTY SHOES, formerly noticed, the catalogue informs us, are still made by the American Novelty Shoe Co., Meadville, Pa.

SHELTON TOBACCO CURING Co., Asheville, N. C., make the Shelton Tobacco Hanger, and set forth its merits in a pamphlet, which also gives in detail their method of raising and treating the crop.

EUROPEAN CATALOGUES.

ALEGATIERE, Lyons, France. This horticulturist is celebrated for his double pelargoniums or geraniums, and offers this year 38 entirely new varieties, as well as new carnations.

E. G. HENDERSON & SON, London, Eng., have as usual an immense catalogue of seeds of all kinds, with many novelties, and all admirably classified and illustrated.

CARL PABST, Erfurt, Prussia. An extensive stock of various seeds, including those of greenhouse plants.

Sweet Potatoes.—"H.," Spring Dale, Mass. If for market, plant "Nansemond"; for our own use we prefer the "Southern Queen," which has a very pale skin, and not being known in market, would not sell so well. You can get the plants at the proper season from the New York seedsmen, and probably in Boston. The crop needs potash, hence ashes are excellent for it; but manure should also be used. Your compost might answer, but we should prefer to add ammonia to it in some form; 200 pounds of guano would be useful.

Books on Carpentry.—"F. H. V.," Henrico Co., Va. Bell's Carpentry, and Lakey's Village & Country Houses. Had you sent P. O. address, you would have had a reply a month ago.

Subsoiling.—"E. F. C.," Huntingdon, O. A heavy clay with a stiff clay subsoil will be improved by subsoiling. By subsoiling is meant breaking and loosening the subsoil so as to permit water to sink freely through it and to admit air and warmth, but not plowing it up to the surface to cover or replace the top soil. Subsoiling is done by peculiarly shaped plows, which penetrate 16 or 18 inches deep, and do not disturb the upper soil. The subsoil plow may be run behind the common plow in the furrow, or when the field is plowed it may be run in lines a foot apart, and both ways across the field. If this is done every two years, a gradual deepening of the soil will be effected, which will greatly add to its value.

The Buffalo Live Stock Journal.—This journal has expired, or rather it has blended itself with the "National Live Stock Journal" of Chicago; in its last dying speech and confession, the Buffalo journal says, and it appears on the first page of the National: "When the Buffalo Live Stock Journal was started, nearly six years ago, very little attention was given, in the agricultural journals, to the discussion of the live stock interest."—That is about the coolest we have seen; in the present scarcity of ice, copies of this article might be used in a refrigerator as a substitute. "Six years ago."—on, not even that—"nearly six years ago" none of us had done anything. It is not to be wondered that a paper which knew so much less than nothing about the literature of its own specialty, should fail of success, and its poor little snowflake drop into the ocean of the other journal. As the National Live Stock Journal is sufficiently able to stand without help, we wonder that it published such nonsense, and we hope for its readers sake, none of the wisdom which dictated the paragraph we have quoted, has been transferred with the "entire business, good will, and subscription list" of the Buffalo Journal.

Wool Pulling Sheep.—"L. N. C.," Pierce Co., Wis. Sheep will nibble and pull their own wool when their skin is irritated by lice, ticks, or some disease, such as scab. The irritation may also be caused by too high feeding or a too warm pen. A teaspoonful of sulphur with an equal quantity of cream of tartar and salt given once a day for a week, may tend to allay the irritation. If the sheep will not take it readily, it should be placed upon the root of the tongue with a spoon, and the mouth held up until it is swallowed.

The Points of a Pure Cotswold Sheep.—"J. H. S.," Logan, Ind. The pure Cotswold is distinguished by its coat of long wool, which is often beautifully waved or curled, its broad loin and square form, a forelock of wool upon the forehead, and a white broad face and massive head. Some pure-bred sheep have brown patches upon the face and forelegs. The full-grown rams will weigh 250 lbs. or over, and the ewes 180 lbs. or over. The wool is 7 to 9 inches in length.

"Emperor William" Cabbage.—"A. H. R.," Middletown, Conn., sends us an advertisement of this cabbage, in which it is claimed to be "The BEST, LARGEST, HARDIEST, and most PROFITABLE variety of Winter Cabbage known in Europe," and asks if it is not a humbug. We have the most recent catalogues of the leading seed-houses in England, France, and Germany, neither of which offer "Emperor William" Cabbage. This is offered by a person not known as a seedsman, and the "Bismark" Cabbage, also unknown to the trade, was offered in a similar manner last year. Our friends may be sure that any cabbage or other seed of value will be found in the hands of the regular dealers.

Peach Baskets.—It would pay some one who makes peach baskets like those figured in the *American Agriculturist*, in November last, to advertise them. Inquiries about them are numerous. We do not know where and by whom they are made. The one figured came from somewhere in Michigan.

Florida State Fair.—Mrs. "A. A. H." sends a detailed account of the Fair held at Jacksonville, in Feb. last, for which we cannot make room. We glean from it that the fair was a success, not so much as a large display, but for the spirit manifested by the producers. Among the peculiarly Florida products, was a great variety of articles made from palmetto leaves; vegetables were numerous and fine, and included ripe tomatoes and egg plants; oranges were in great abundance, as were lemons and others of the citrus family; pine apples in various stages came from Key Largo, and Col. Molony, of Key West, sent a collection, the list of which reads like a catalogue of the fruits of the West Indies—cocoanuts, bananas, guavas, and others, all from his own garden. Roses and other flowers were exhibited, and a better display in all departments is promised for next year.

Saltpeter for Grass.—"G. F. D.," Lowell Mass. Nitrate of Soda is extensively used as a top-dressing for grass. It is often called Chili Saltpeter. About 150 lbs. per acre, is the proper quantity to use. It should be finely pulverized and evenly spread. For price refer to market reports.

Manure Yard.—"E. B. G.," Northport, L. I. We should think it would pay to go to the expense of fifty dollars or more, to make a proper manure shed to save 150 loads in yearly. If the value of each load is increased 25 cents, then 75 dollars would be saved in two years. This is the proper way to consider the matter.

Right of Way.—"W. G.," West Troy. A deed of real estate if properly expressed, should convey, amongst other rights of property, "easements" which have belonged to the property; and a right of way or access to the property, is an easement. It would be proper to consult a lawyer in cases of doubt.

Charcoal "Braize" for Manure.—"J. N. W.," Marquette, Mich. Charcoal is almost indestructible, and therefore of no value whatever as a fertilizer. If the "braize" is burned into ashes, they would be of considerable value; the slower the braize is burned, the better the ashes will be.

Winter Oats.—"O. J. G.," Van Buren Co., Mich. The winter oats grown in the southern states, will not survive a northern winter. For the northern states the Probestier, or the New Brunswick oats, yield the best crops and the heaviest grain of any we have tried.

Distillery Manure.—"P. A.," Wellington Co., Ontario. Solid stable manure at $1.00 a load, is preferable to semi-liquid cow manure from a distillery; if the latter could be had for hauling, and there was time to draw it, we would be glad to have in on these terms. To use this half liquid stuff, we would haul it in a tight box, (and if it were not quite tight around the bottom, a little solid manure would make it so;) take it directly upon a meadow or plowed field, and then raising the tail-board sufficiently, would let it run out as the wagon was driven up and down the field. It would take a good deal of this stuff to do any harm to a field.

Buckwheat for Sheep.—"G. W. S. H.," Highland Co., Va. Buckwheat is a good grain for sheep as a change from other feed. When given for a long period, it causes irritation of the skin, and the sheep are apt then to nibble their wool, and pull it out. A pint a day is a fair allowance for each sheep. No grain needs to be ground for sheep, as they masticate and digest their food very thoroughly.

Roots for Milch Cows.—"O. B." Brumfield Station, Ky. We would rather grow the sugar beet for feeding to milk cows, than any other root. The best variety is Lane's Improved Sugar Beet, originated by Henry Lane, Cornwall, Vermont. In growing beets, or any other roots, the aim should be to produce a thickly set crop of moderate sized roots, rather than large, overgrown ones, which contain less nutriment in proportion than the smaller roots.

Thoroughbred and Full Blood.—"A. J. B.," Butler Co., Pa. These mean the same thing. The usual meaning attached to these terms is, an animal that is descended from a line of breeding through ancestors which have been accepted by breeders as pure-bred, according to the standard generally recognized by some association of breeders, such as a herd-book society or one equivalent thereto. The produce of a ¾ bred and a full blood is a ⅞ bred animal. Thoroughbred is only a term of convenience. For instance, we have no domestic animal that approaches the purity of blood possessed by the wild buffalo (the bison of America), nor any that reproduces so exactly with a fixed type; our stock being really cross bred from different varieties. But after a number of years of close and careful breeding by breeders of acknowledged skill, a class of animals becomes accepted as pure-bred, just as the Jersey or the Short-horn cattle are.

Beet Sugar in California.—"D. R. S.," Augusta, Me. The experment of making beet sugar in California has been successful, and we believe that a factory has been in operation near Sacramento for three or four years. We have not heard, nor can we say, anything as to its operations during the last season, except that contracts for beets were given out last spring.

Fish as Manure.—"H. M. R.," Oconto, Wis. Fish contain much valuable fertilizing matter. A good method of making them available is to mix them in a heap with earth or swamp muck, and leave it to decompose. When the fish is well rotted, the heap should be mixed by shoveling it over. It may then be used as a top-dressing, or be applied in the hill for corn, potatoes, or cabbage. A small shovelful is enough for each hill. If plenty of swamp muck, or the top soil from woods is mixed with the fish, there will be little danger of injuring the land by their use.

Advice to a Lawyer.—"Subscriber," Hamilton, O. We would advise no person who is successful at any business to abandon it with a view to bettering his condition by farming, whether it be upon a dairy, stock, or tillage farm. The profession of law is a useful and necessary one, and is a much easier business than farming, although some people who are more sentimental than practical, try to believe that "beautiful cows, sheep, and pigs" involve no hard or disagreeable work, or risk in a business way. "Let the cobbler stick to his last," is a homely proverb, but is not devoid of wisdom.

Feeding Linseed.—"M. R. A.," Everett, Pa. Where linseed oil-cake cannot be procured, a substitute may be provided by grinding linseed mixed with an equal quantity of wheat or rye bran, in a common grist-mill; oats, or bran and oats together, may be used instead of bran alone. Linseed cannot easily be ground between mill stones without such admixture.

Silkworms in Kansas.—S. Crozier, Silkville, Franklin Co., Kas., has been for some years engaged in producing silk, and gives in a pamphlet form his methods of cultivating the mulberry tree and treating the worm and its product. The author thinks that wherever the mulberry will thrive, the farmers' daughters should raise their own silk dresses. Those interested in silk culture should consult this treatise, which costs 50 cents.

Thorburn's Early Paragon Potato.

Pure White Skin and Flesh. The finest **Early Potato yet introduced.** By Mail, 50c. per pound—by Express or Railroad, $3 per bushel, or $6 per barrel.

GARDEN, FIELD, FLOWER, AND TREE SEEDS, AND SPRING BULBS.

Catalogues on application to

J. M. THORBURN & CO.,

15 John Street, New York.

Chilli Red, Early Goodrich, Peerless, and Rose Seed Potatoes,

for sale by **MEYERS & ALLEY, 83 Murray St., N. Y.**

CHOICE SEED POTATOES, ONION SEED, SEEDS, BULBS, AND PLANTS OF ALL KINDS. Snowflakes, Alpha, Eureka, Ruby, Early Paragon Potatoes. Red Globe, White Globe & Yellow Danvers Onion Seed. Choice Seeds, Bulbs & Plants, all at low prices. Stock first class and warranted to please. Buff Cochins Eggs from choice fowls, $1.00 per doz. Don't fail to get my prices before buying. Catalogue free. E. B. JENNINGS, Seed Grower, Southport, Ct.

THE OHIO BEAUTY POTATO,

FOR SALE BY

D. AUGS. VANDERVEER, Manalapan, N. J.

Prices, per barrel, $3, for small size.
" " " $5, " large size.

Snowflake Potatoes, 50 cts. per lb. by mail. **Strawberry Plants.** Downers, Chs. Downing and Kentucky, 75c. Monarch of the West, $1 ₱ 100 post-paid. D. E. Hoxie, Northampton, Mass.

SWEET POTATOES, Nansemond, Early Red, Southern Queen, and Bermuda. Large stock; $1.75 for three pecks, $6 per barrel. [A typographical error in this advertisement last month is now corrected; *i. e.*, the price per barrel is **$6.**] Discount on large orders.
W. W. RATHBONE, Marietta, Ohio.

GET THE BEST—The Snowflake Potato.—By express or freight, $1.25 per Peck; ½ Bushel, $2.00; Bush., $3.00. Extra Early Vermont, 1 Peck, 75 cts.; ½ Bush., $1.25; Bush., $2.00; Barrel, $4.00. Grown from seed procured of Bliss & Sons. THOMAS R. LATHROPE, Carbondale, Pa.

$250 in Cash Prizes—To Potato Growers.

New desirable varieties direct from originator. Description, Price, Conditions, and much good advice, free to all applicants. D. A. COMPTON, Hawley, Wayne Co., Pa.

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5 POUND POTATO. Send to G. M. ROWE, East Chatham, Col. Co., N. Y., for Brownell's Beauty, Snowflake, and Eureka potatoes. One of the Eurekas of my own growing weighed *five lbs.* 50 eyes of either kind, by mail post-paid, for 25 cts.

Thorburn's Late Rose Potatoes.

Genuine. Only two dollars per barrel. It is a good time to try them. **JOSEPH HARRIS,** Morcton Farm, Rochester, N. Y.

SEED POTATOES, Snowflake. Best Medium Early, by express, peck $1; bushel, $2.50. 1 lb. by mail 50c.; 3 lbs., $1., Early Vermont and Brownell's Beauty, at low rates. Address J. O. McCARTY, McEwensville, Northumberl'd Co., Pa.

THE best potato is LOUNSBURY'S PERFECTION. 1 lb. $1; 3 lbs., $2.25, prepaid. 1 peck $5, by express. Address JOHN W. LOUNSBURY, Cannon's Station, Ct.

POTATOES Brownell's Beauty and Compton's Surprise.
POTATOES $1.50 per bushel; $3 per barrel; 1 lb. by mail 25 cts. R. P. FULKERSON, Ashland, Ohio.

Early Southern Produce a Specialty.

King of the Earlies, Snowflake, and all standard varieties of Seed Potatoes, in fine order at lowest prices.

T. C. DAVENPORT,
Produce Commission Merchant,
107 & 122 Dock St., Philadelphia.
Shippers Advised Daily.

Yellow Globe Mangel Wurzel Seed.

Of my own raising, from selected bulbs. Price, 75 cts. per pound; 4 lbs. for $2.50; sent prepaid by mail. 10 lbs., or over, by express, 50 cents per lb. There is no better root for milch cows, sheep, or pigs. Address,
JOSEPH HARRIS, Morcton Farm, Rochester, N. Y.

COMMISSION **CENTENNIAL** HOUSE OF

HULL & SCOTNEY,

346 N. WATER ST., PHILA.,

is the place to send your **Vegetables, Fruit, Poultry, Butter, Eggs, Furs, Hides, Wool,** and **Produce of all kinds.** Marking Plates, Tags, Price Lists, etc., on application.

Every Farmer should have One.

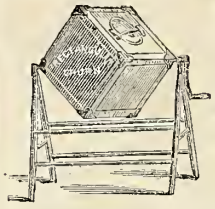
On receipt of **$1.00** I will send by mail, postage paid, one (1) Soldering Iron, handled, and the copper tinned, ready for immediate use; one (1) Stick of Solder; one (1) small Box of Rosin, with directions, that will enable any man or woman to mend their own tinware, solder up, as well as open canned fruit. This is no toy, but the regular size that tinmen buy. Address, with name as well as County and State, J. W. BAKER, 821 North Second Street, Philadelphia, Pa.

AGENTS! and all who have time to improve canvassing, send for our new Novelty Catalogue. *No Humbugs.* T. J. HASTINGS & CO., Worcester, Mass.

SOLE MANUFACTURERS,

Porter Blanchard's Sons,

[Send for Circular.] **CONCORD, N. H.**



The Rectangular Churn

and

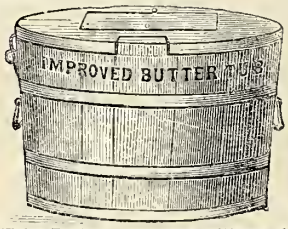
Butter-worker,

Without flouts or agitators of any kind. 5 Sizes made.

Agents wanted where we have none. Send for Circular.

CORNISH & CURTIS, Fort Atkinson, Wis.

IMPROVED BUTTER TUBS AND COOLERS,



with movable Ice Chambers. Patented Jan. 12th, 1875. Best in the market. Are made of white Cedar, bound with galvanized iron or brass hoops. Within the tub is fitted a tin Cooler, having a movable Chamber for ice at each end. On the tin is constructed a series of ledges, on which rest the shelves for supporting the butter (Print Butter); are used without shelves for Roll Butter. Can be locked for shipping. Hinges, Hasps, and Fixtures, are tinned, to render them rust-proof. J. G. KOEHLER, Manufacturer, 503 North 2nd St., Philadelphia, Pa.

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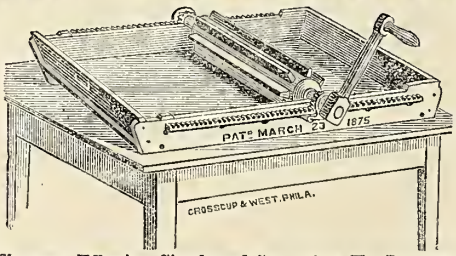

The most Effective, Simple and Convenient Yet Invented. **Works 30 lbs. in less than 5 minutes,** thoroughly working out the buttermilk and mixing in the salt.

"It is a machine that should be in every dairy, small and great."—*William Crozier, Northport, L. I.*

Send for circular and price lists.

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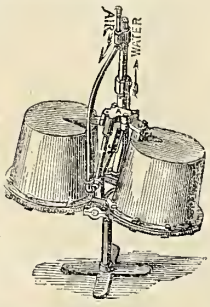

Water driven to any height and distance by *compressed air.* Country houses supplied cheaply and certainly for bath-rooms, water closets, hot and cold water faucets, etc.

Plenty of fresh water for stock on farms. Address

HARTFORD PUMP CO.,
HARTFORD, CONN.
AMERICAN MACHINE CO., 430 Walnut St., Phila.
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GARDEN ENGINE AND FIRE EXTINGUISHER.—For Washing Windows, Carriages, etc. Protects Buildings from Fire, and Trees, Vines, etc., from Insects. Throws water 50 ft. Easily carried. No Dwelling, Country Home, or Factory should be without the Fountain Pump. Send for large Illustrated Circular. J. A. WHITMAN, Sole Proprietor and Manufacturer, Providence, R. I.

Force Pump, Plant Syringe.—$4.50.

Page's Improved, with Graduating Sprinkler—will throw water 50 feet, and change to coarse spray or fine mist instantly. N. PAGE, JR., Danvers, Mass.

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This water-proof material, resembling fine leather, is for outside work (*no tar substances used*) and inside, instead of plaster. Felt carpetings, etc. Send for circular and samples.

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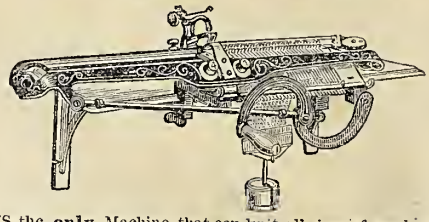

IS the **only** Machine that can knit all sizes of work, and narrow and widen it; that can **shape** and COMPLETE, without hand-finishing, seamless Hosiery, Gloves, and Mittens, or knit them in **all sizes;** or knit Ribbed, Double, and Fancy stitches for Underwear, Jackets, Shawls, Scarfs, etc. It knits over **25** different Garments. Over **100** per cent Profit in Manufacturing Knit Goods. The Farmer trebles the value of his Wool by converting it into Knit Goods. Women make **$5.00** a day with it. Agents wanted. Send stamp for Samples of work, and **reduced** Price-List. Address LAMB KNITTING MACHINE CO., at Chicopee Falls, Mass.; Cincinnati, O.; Chicago, Ill., or 922 Chestnut St., Philadelphia.

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SILENT SEWING MACHINE.

HIGHEST AWARDS FROM STATE INSTITUTES.

It will pay you to write for full particulars of this wonderful invention.

WILCOX & GIBBS S. M. CO.,
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$2.50 Will Buy One of our WORKING SUITS.

DURABLE! DOUBLE STITCHED! NEAT!

On receipt of $2.50, we will send our duck suit (brown or drab), by mail Postage paid. Give length of inside seam of pants and your waist measure.

BIG PAY made by wide-awake men taking orders for these goods.

SEND FOR CIRCULAR.
Address **CHAS. A. BALDWIN & CO.,**
SOLE MANUFACTURERS, **New Haven, Conn.**

GRAY'S UNION CHARTS!

Full directions with each chart. Any person can use them. They cannot go out of style, will last a life-time. Sent free on receipt of price:

Ladies' Dress Chart, cuts 21 sizes. Boys' Sack Coat Chart, cuts 11 sizes. Vest Chart, cuts 21 sizes and five styles, $1 each. Shirt Chart, cuts all sizes, and to open on the back, or in front. Pants Chart, cuts all sizes and styles. Men's Sack Coat Chart, cuts 11 sizes, $1.50 each; or, the full set, six charts, $6. AGENTS WANTED. Address

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THE NEAT HOUSEKEEPERS'

STOVE DRESSING.

NO DUST! NO SMELL!

Always soft and ready for use without a dish.

It will do more work with less labor and expense, and give a more elegant and lasting lustre than any Stove Polish ever produced. *A stove can be dressed on delicate carpet without soiling it.* Send 10 cents for sample package.

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TRY the **PATENT BLUEING BAG.** Superior to all other Laundry Blues in economy and convenience. Each bag put up in a neat box. Price 10 cts. If your Grocer does not keep it, it will be sent direct by addressing

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Prices Reduced.

Bailey's Patent Adjustable Planes, and other Improved Tools. Send your address, on a Postal Card, and receive an Illustrated Circular from the Manufacturers,

STANLEY RULE & LEVEL CO., New Britain, Ct.
☞ Sold by all Hardware Dealers.

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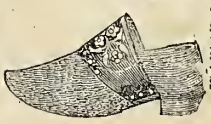

The dryest and most serviceable shoes made. Samples by mail, post-paid. Wood, 75 cts., Wood and Leather highly finished, $1.50 per pair. Send for Free Circular of Styles and Prices. Agents wanted.

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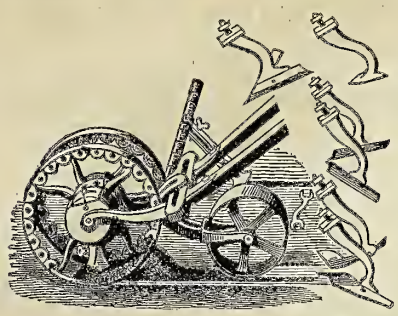

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AND WHEEL HOES PERFECTED FOR '76.

They "SOW *like a charm;*" *no packing* of seed in the hopper, *no crushing* it, *no difficulty* with *chaffy* or *soaked* seeds, *no watching, no pausing* or *waste* at the ends, *no irregularity* in depth, *no skips, no springs* or *gearing* to wear out, *no noise*, NO EQUAL. No. 2, holds 2½ qts.—No. 3, holds ½ bush. and sows Fertilizers.

THE COMBINED machine, the AGRICULTURIST PREMIUM, (see Premium List), holds 1 qt., and "*is a perfect seed-sower.*" It has one pair of hoes for general work, one for heavy furrows, a plow and subsoiler. THE DOUBLE WHEEL HOE (see cut) works *easier, better, and six to twelve times faster* than the hand hoe. Wheels can be set two, six, or ten inches apart. It has three different pairs of hoes, and a pair of subsoilers; ALL our blades are steel, tempered and polished. Will work 6, 9, or 10 inch rows, TWO AT ONCE, *often saving cost in a day.*

Our NEW polished steel blade HORSE HOE, perfected after ten years of experiment, and trial by our S. L. Allen, a practical farmer. *Saves* most of the hoeing, and *makes the remainder easy;* leaves the ground *level or ridged* as desired, *opens furrows, hills,* and cultivates shallow or deep, and is a thorough weed killer. Especially adapted to the wants of *Market-Gardeners, Broom Corn, Tobacco, Cotton, Rice, and Root* Growers, and all lovers of thorough work; should be owned *by every farmer.* Send for cuts with full description and testimonials, free. *Mention this paper.* S. L. ALLEN & CO., Sole Manfrs., 119 S. 4th St., Phila., Pa. **We must have A LIVE AGENT in every town.**

NEW EXCELSIOR LAWN MOWER.

PRICES REDUCED for 1876.

IT HAS THE LARGEST SALE OF ANY LAWN MOWER IN THE WORLD.

It has been adopted, and can be seen in practical operation on **Central Park** and all the other **City Parks, New York; Government Grounds** and **City Parks, Washington; Boston Common, Boston; Prospect Park, Brooklyn;** and on almost every prominent Park throughout the **United States and Canada.**

THE GREAT TRIAL of Lawn Mowers was held in New York City June 25th, 1874. There the **Excelsior** came into competition with all the best Lawn Mowers in the world, and was awarded the **HIGHEST PREMIUM.** Four sizes for hand-power; four sizes for horse-power.

Prices from **$14** to **$200.**

EVERY MACHINE WARRANTED.

Address

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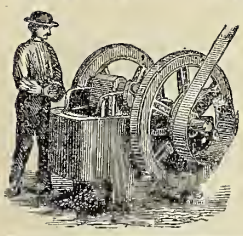
Send for Circular. **Newburgh, N. Y.**

N. B.—We call **special attention** to our new **HORSE MOWER for 1876.** Gears entirely covered and weight reduced 200 lbs. It is the **LIGHTEST and BEST HORSE MOWER EVER MADE.**

BLAKE'S PATENT STONE AND ORE BREAKER.



New Patterns, with Important Improvements and Abundant Strength.

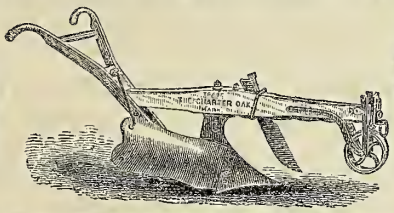
For reducing to fragments all kinds of hard and brittle substanses, such as STONE for making the most perfect McADAM ROADS, and for making the best CONCRETE. It breaks stone at trifling cost for BALLASTING RAILROADS. It is extensively in use in MINING operations, for crushing

IRON, COPPER, ZINC, SILVER, GOLD, and other ORES. Also for crushing **Quartz, Flint, Emery, Corundum, Feldspar, Coal, Barytes, Manganese, Phosphate Rock, Plaster, Soapstone, etc.**

BLAKE CRUSHER CO., NEW HAVEN, CONN.

THE CHARTER OAK SWIVEL PLOW.

SOLE



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THE ONLY PERFECT SWIVEL PLOW.

The season of 1875 has proved by actual use of over 300 plows that it has no equal.

Send for illustrated circular with full particulars to

THE HIGGANUM M'F'G CO.,
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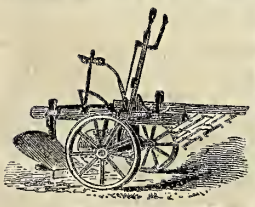
FURST & BRADLEY'S GARDEN CITY SULKY & GANG PLOWS



are the only ones in the **world** having the **Patent BREAK Attachment** on the **wheel,** whereby the **Horses** do all the **Labor** of **throwing** the **Plows** out of the ground, so that a **Boy 12** years of age can handle it with **ease.** Send for our 64-page **Illustrated** Pamphlet for full description. Printed in English, German, Swedish, and Norwegian. Address

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SEND YOUR ADDRESS FOR

The "AGRICULTURAL ECONOMIST."

It will give you complete description of new Improved Farm Implements. Manufactured by the BRADLEY M'F'G CO., Syracuse, N. Y.

FOUST'S HAY LOADER, Improved for 1876, including Wind-Break Attachment. Warranted to pitch a ton of hay from the winrow in five minutes, and take it as clean as by the hand fork. Adapted to all ordinary meadow land, and to any farm wagon. Manufactured by STRATTON & CULLUM, Agricultural Works, Meadville, Pa. Send for Descriptive Circulars early.

The Thomas Smoothing Harrow.

Send for Illustrated Catalogue. Six years before the public. 10,000 in use. Address on Postal

ROBERT C. REEVES,
GENERAL AGENT FOR NEW YORK CITY,
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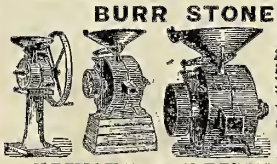
Agricultural Implements, Fertilizers, and Seeds.

☞ Seed Catalogue mailed free on application.

BURR STONE MILLS.



Fast grinding. Small power. 20 patents for grinding and bolting. 30 years a specialty. Grinds with hand, horse, wind, water or steam power, any vegetable or mineral. Send stamp for cuts and prices.

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E. & O. WARD, PRODUCE COMMISSION MERCHANTS.

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Established in 1843.

Agricultural Implements and Farm Machinery, Seeds, and Fertilizers.

A full assortment of the best standard, as well as of the latest improved kinds, constantly in stock and for sale by

R. H. ALLEN & CO.,
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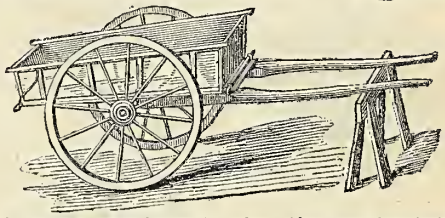
TO OWNERS OF BUCKEYE MOWERS and REAPERS.

PLEASE EXAMINE YOUR MACHINE NOW, and ORDER from our agents what REPAIRS you need. DO NOT WAIT TILL HARVEST. As many inferior IMITATIONS of our KNIFE SECTIONS are offered for sale, BE SURE that you get only those of our OWN MAKE, which are PACKED IN BOXES with OUR NAME ON THE LABEL.

ADRIANCE, PLATT & CO.

Factory, Po'keepsie, N. Y. } 165 Greenwich st., N.Y.

Farm Carts and Wagons



Always on hand and made to order. Also every description of Heavy Cart and Wagon for city and country use and for shipping. Illustrated Circulars free by mail.

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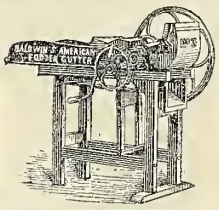

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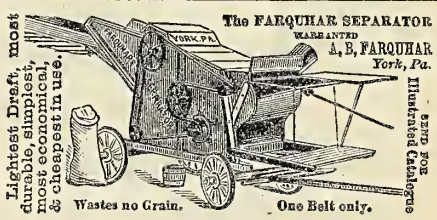
Best in the market. Don't purchase any other kind until you have seen and examined this. Send for Circular, containing Description and Price List. See Nov. No. of *Agriculturist.* C. PIERPONT & CO., Manufacturers, NEW HAVEN, CONN.



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Wind-Mill.

PERFECTLY Self-Regulating. The Best, Cheapest, most Durable and Popular Mill made. Manufactured under the immediate supervision of Inventor **21** years. Two and a half million dollars' worth now in use. Send for Catalogue.

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RICE'S SPRING BRACE.

Pat'd Feb. 11, '68 and Jan. 4, '76. $3 to $5 each, delivered. So saves all parts of the vehicle that it will do twice the service, and ride easier. Agents wanted. Address SPRING BRACE MANUFACTORY. CHAS. L. RICE, Proprietor, Lock Box 384, Scranton, Pa.

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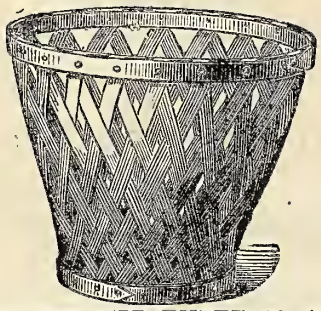

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For circular of description, &c., address
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SEND to the MILFORD BASKET CO., Milford, Del., for prices of **Berry Baskets** and **Crates, Peach** and **Verbena Baskets.** They make the lowest priced and best Square Basket in market.

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Manufacturers,
KING & SAVAGE,
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WRITE FOR CATALOGUES AND PRICES.

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Send for circular giving history of berry and testimony of F. R. Elliott, M. B. Bateham and other horticulturists and persons who are well acquainted with the berry. Price, for 6, $2; 12, $3; 25, $5; 100, $20. Payment to accompany orders. **Remit by Draft, Money Order, or Registered Letter.** GEO. H. LODGE,
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STRAWBERRY PLANTS.

All the best varieties at lowest rates. Price-list Free. Please mention what paper you saw this in.
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FENCE. Combined Wire and Wood. Permanent or portable. Cost of fencing reduced to lowest point. Effective, cheap, handsome and durable. State and County rights for sale, and agents wanted. Money to be made. Send for Circulars. **THOS. H. SPEAKMAN,**
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CABLE FENCING.

Proof against Cattle, Fire, and Rust. Hundreds of miles erected. Cheap, Handsome, Durable.
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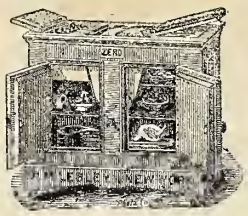
OUR $5 WATER CLOSET or combined slop-pail and commode is perfectly practical, portable, scent-tight. Our **EARTH CLOSETS,** from $5 to $40, the best in the world. For **DECENCY, health, economy, comfort,** use nothing else.
Send to THE WAKEFIELD, 36 Dey St., N. Y.

NOVELTY DEPOT. All the Best and Fastest selling Novelties — Chromos—Pens—Pencils—Holders—Stationary, &c.,&c. Catalogue Free. **City Novelty Co.,** Philadelphia, Pa.

RUFUS L. COLE, Produce Commission Merchant, 141 Reade St., New York. *Established in* 1852. Market reports and shipping directions sent *free* on application.



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REFRIGERATOR
with Water and Milk Cooler, is the **BEST** Food and Ice Keeper in the World. Send for Catalogue.
ALEX. M. LESLEY,
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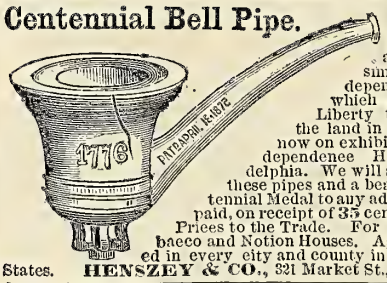
Self-Propelling Chairs
For Cripples and Invalids

Can be *easily* propelled, either in or out doors, by any one having the use of hands. State your weight and send stamp for illustrated catalogue of different styles and prices.
Please mention this paper.
S. A. SMITH,
No. 32 Platt St., N. Y. City.

Centennial Bell Pipe.



This is a beautiful wood pipe, and is a facsimile of Independence Bell, which proclaimed Liberty throughout the land in 1776, and is now on exhibition in Independence Hall, Philadelphia. We will send one of these pipes and a beautiful Centennial Medal to any address, postpaid, on receipt of 35 cents. Special Prices to the Trade. For sale by Tobacco and Notion Houses. Agents wanted in every city and county in the United States. **HENSZEY & CO.,** 321 Market St., Phila., Pa.

"DON'T FORGET IT!"—Singer's Safety Guard is worth all the Burglar Alarms ever invented. Agents wanted everywhere. Silver plated sample prepaid on receipt of 25 cents. Address, A. H. SINGER, 438 Walnut Street, Philadelphia, Pa.

WARD'S HORSE AND CATTLE SPICE is used by the best horsemen, largest railroad, express, and livery stables in preference to any Condition Powder in use. It has no superior for Coughs, Colds, Worms, loss of Cud, Appetite, or general debility in Horses or Cattle. It purifies the Blood and Water, renovates the System, and keeps the animal in a healthy condition. Prevents and Cures Gapes in Poultry. Prevents Hog Cholera. If you feed it to hens, the increase in the number of eggs will surprise you. Sold by Feed, Grocery, and Drug Stores. Put up in 2 lb. packages, 2 to 5 doz. in cases, $2.50 per doz. Depot 191 Duane st., New York.
A. McELRATH, Manager.

Essex Pigs.

I have thirteen litters of very choice pure bred Essex pigs, born Jan. 27-Feb. 4. They will be ready to ship in April. I never had so fine a lot of pigs, and I shall have much pleasure in sending them to any readers of the *American Agriculturist.* Prices at two to three months old, as follows:

One Boar,	**$20.00**
" " and one sow, not akin	**$40.00**
" " and two sows, " "	**$55.00**

The pigs will be sent by express on receipt of the money, in whole or in part. I guarantee the safe delivery of the pigs. Address,
JOSEPH HARRIS,
Moreton Farm, Rochester, N. Y.

Get the Best. English Yorkshire Pigs. From stock imported directly from Yorkshire, England. They received the 1st Premium at N. E. Fair, 1873. These pigs are good size, light haired, white color, prolific, and ready fatteners. Boar Pig, 10 weeks old, $15.00. Sow, same age, $10.00. Boar and Sow, not akin, $20.00. Boar and 2 Sows, not akin, $30.00. Shipped to destination at my risk, and warranted as represented. Ready for shipment May. 1. Also Holstein and Short-horn Cattle. Marlborough Stock Farm, JOS. KNIGHT, Propr., Newburyport, Mass. P. O. Box 352.

WILLIAM CROZIER, Manager of Beacon Stock Farm, Northport, Long Island, N. Y., Breeder and Importer of thoroughbred Alderney and Ayrshire Cattle; Clydesdale Horses; Cotswold Sheep; Berkshire Swine, and Fancy Poultry. The Stock bred at Beacon Farm is imported, and from the best imported sources, and has won the unqualified admiration of the best judges. They have taken the first prizes at Provincial Shows, and at leading State and County Fairs in Canada and the United States.

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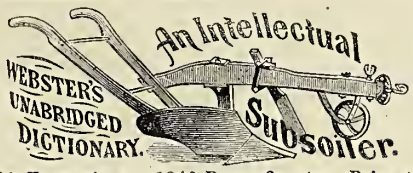

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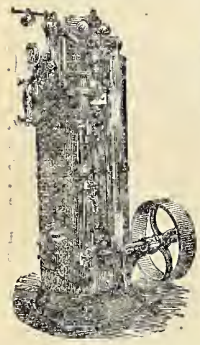

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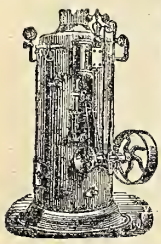

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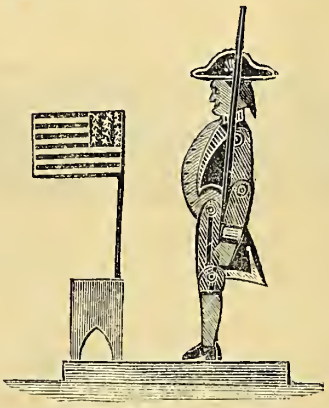

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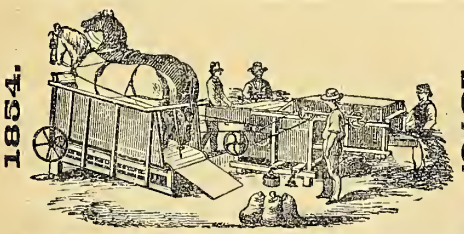
1854.  1876.

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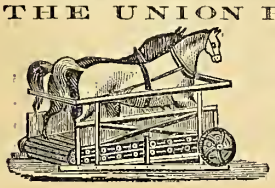
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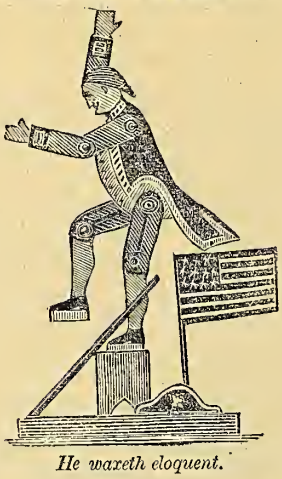
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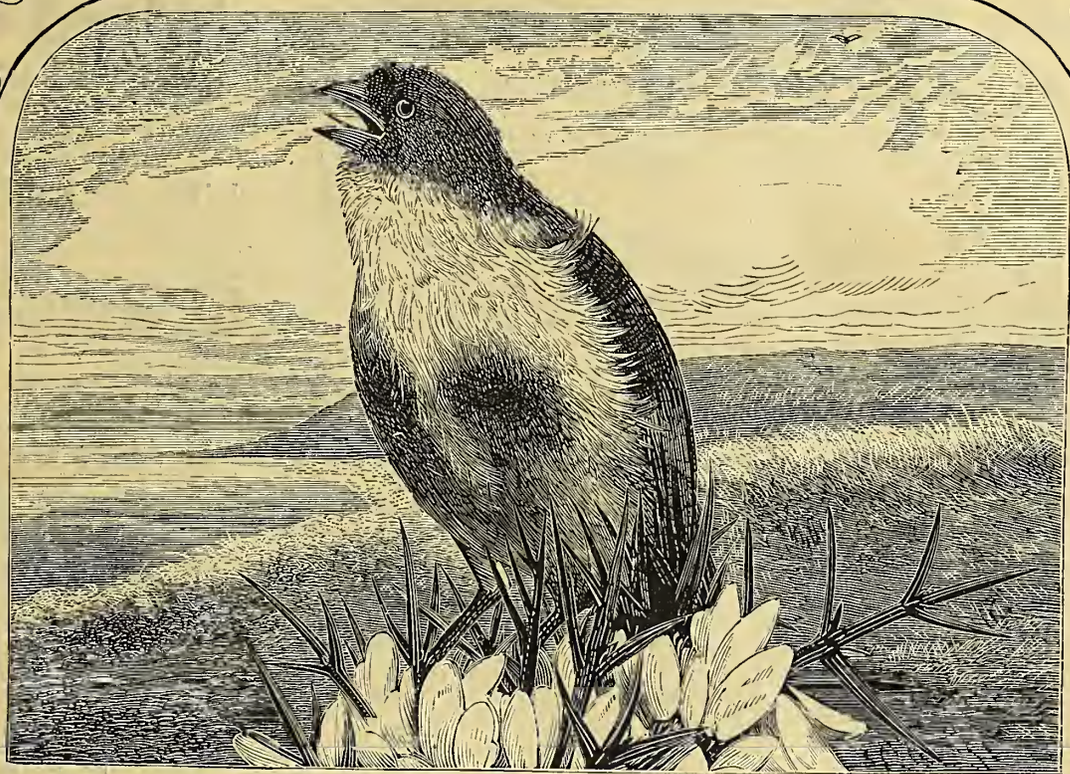

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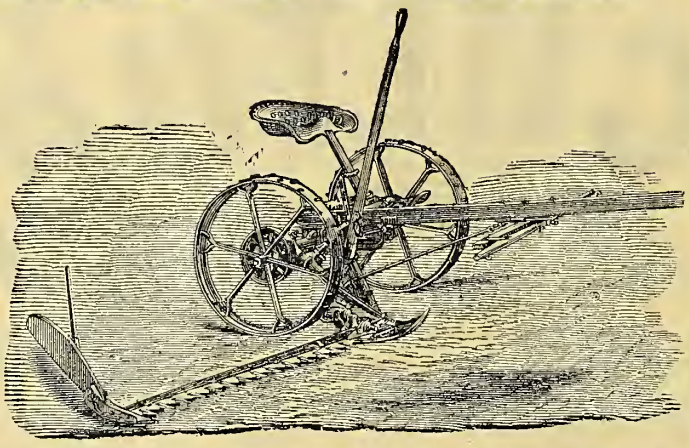

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VOLUME XXXV.—No. 5. NEW YORK, MAY, 1876. NEW SERIES—No. 352.

THE AGRICULTURAL HALL AT THE CENTENNIAL EXHIBITION.

The most interesting part of the Centennial Exhibition, which opens on the 10th of this month, at least to farmers, will be the Agricultural Hall, while fruit growers and other horticulturists will be equally attracted to the Horticultural Hall. The Agricultural Hall will contain products gathered from all parts of the world. Here will also be brought together agricultural implements from many countries with which the American farmer competes in the markets of the world. Side by side with the most improved of modern machinery, will also be exhibited the old-fashioned and obsolete implements of early times. If it is true that to travel and see foreign countries, and the ways, methods, and productions of strange people, enlarges the mind and the capacity for appreciating what is good or faulty in our own surroundings, then the intelligent and studious farmer may, in a few days, learn a lesson in this building that would require months or years of time, and large expense, to acquire in the ordinary manner. The agricultural building, a view of which is given in the above engraving, is situated near the Horticultural Hall, which has been already described in the *American Agriculturist*, and covers a space of over ten acres. To realize the magnitude of this building, one has only to look at a ten-acre field, and imagine it to be roofed over in the manner above shown. The building is of wood and glass, and consists of a long nave, crossed by three transepts, finished in the Gothic style. The nave is 820 feet long, and 125 feet wide, with a hight of 75 feet from the floor to the point of the arch. The central transept is of the same hight, and 100 feet wide, the end transepts are 70 feet high, and 80 feet wide. The portions of the building, which are enclosed on three sides between the nave and transepts, are roofed over, and will be used for the exhibition of the heavier and more bulky agricultural machinery and implements. The yards for the accommodation of horses, cattle, sheep, and poultry, are not included beneath this building, but are placed near it, where they may be conveniently inspected. Every accommodation for the comfort of visitors, and their rapid transport from one portion of the exhibition to another, has been provided. Horse-cars, and cars drawn by dummy engines, will run to and fro continually. It is understood that abundant accommodations for lodging have been provided at moderate rates, and that there will be on each railroad train going toward Philadelphia an authorized agent to give all needed information. For the engraving we are indebted to the efficient chief of the Bureau of Agriculture, Burnett Landreth, Esq.

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Hight of Cattle Troughs.—"J. A. B.," Mitchell, Ind. When cattle are kept in stanchions they do not need raised troughs. A board fixed upon the floor, about eighteen inches from the stanchion, to prevent the feed from being scattered, is all that is necessary. When kept in this way four feet is enough room for each animal, and the feed-way should be about six feet wide, including the spaces occupied by the feed floors or troughs.

Brown Leghorns for Eggs.—Evan Lewis, Scarlet's Mill, Pa., sends a statement of the production of eggs by six B. Leghorn pullets, as follows: January, 102; February, 102; March, 132. This accords with the general testimony as to the prolificacy of this popular breed of fowls.

The Navy Bean.—"T. M.," Edisto Island, S. C. (?). The so called navy bean is a small variety of the white field bean grown in the northern states. To succeed as a field crop in the south, it should be sown early, or as soon as the frosts are over.

Calendar for May.

1 Day of Month.	1 Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n sets.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	M	4 55	7 0	1 52	4 59	6 56	1 48	5 2	6 52	1 43
2	T	4 53	7 1	2 22	4 57	6 57	2 19	5 1	6 53	2 16
3	W	4 52	7 2	2 43	4 56	6 58	2 42	5 0	6 54	2 40
4	T	4 50	7 3	3 5	4 54	6 59	3 5	4 58	6 55	3 5
5	F	4 49	7 4	3 25	4 53	7 0	3 28	4 57	6 56	3 27
6	S	4 48	7 5	3 45	4 52	7 1	3 47	4 56	6 57	3 50
7	S	4 47	7 6	4 7	4 51	7 2	4 11	4 55	6 58	4 15
8	M	4 46	7 7	rises	4 50	7 3	rises	4 54	6 59	rises
9	T	4 45	7 8	8 56	4 49	7 4	8 50	4 53	7 0	8 43
10	W	4 44	7 9	9 56	4 48	7 5	9 49	4 52	7 1	9 42
11	T	4 43	7 10	10 52	4 47	7 6	10 44	4 51	7 2	10 36
12	F	4 42	7 11	11 37	4 46	7 7	11 30	4 50	7 3	11 23
13	S	4 41	7 12	morn	4 45	7 8	morn	4 49	7 4	11 58
14	S	4 40	7 13	0 10	4 44	7 9	0 4	4 48	7 5	morn
15	M	4 39	7 14	0 42	4 43	7 10	0 37	4 47	7 6	0 31
16	T	4 38	7 15	1 6	4 42	7 11	1 3	4 46	7 7	0 59
17	W	4 37	7 16	1 29	4 42	7 11	1 27	4 46	7 7	1 24
18	T	4 36	7 17	1 49	4 41	7 12	1 49	4 45	7 8	1 47
19	F	4 36	7 18	2 9	4 40	7 13	2 9	4 44	7 9	2 9
20	S	4 35	7 19	2 32	4 40	7 14	2 33	4 44	7 10	2 35
21	S	4 34	7 20	2 57	4 39	7 15	3 0	4 43	7 10	3 3
22	M	4 33	7 21	3 27	4 38	7 16	3 31	4 43	7 11	3 36
23	T	4 32	7 22	sets	4 37	7 17	sets	4 42	7 12	sets.
24	W	4 32	7 23	9 15	4 37	7 18	9 8	4 42	7 13	9 0
25	T	4 31	7 24	10 21	4 36	7 19	10 14	4 41	7 14	10 7
26	F	4 30	7 25	11 11	4 35	7 19	11 5	4 40	7 15	10 59
27	S	4 29	7 26	11 52	4 35	7 20	11 47	4 40	7 16	11 42
28	S	4 29	7 27	morn	4 34	7 21	morn	4 39	7 16	morn
29	M	4 28	7 28	0 25	4 34	7 22	0 21	4 39	7 17	0 18
30	T	4 27	7 28	0 49	4 33	7 23	0 47	4 38	7 18	0 45
31	W	4 26	7 29	1 11	4 32	7 23	1 10	4 37	7 18	1 9

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
Full M'n	8	5 9 mo.	4 57 mo.	4 45 mo	4 33 mo.	4 3 mo.
3d Quart.	16	8 43 mo.	8 31 mo.	8 19 mo	8 7 mo.	7 37 mo.
New M'n	23	10 41 mo.	10 29 mo.	10 17 mo	10 5 mo.	9 35 mo.
1st Quart	30	1 4 mo.	0 52 mo.	0 40 mo	0 28 mo.	11 58 29th

AMERICAN AGRICULTURIST.

NEW YORK, MAY, 1876.

The most important work of the present month in the northern part of the country from east to west is the planting of the corn crop. This work generally occupies nearly the whole of the month, and not only is the labor involved therein of the greatest interest, but the crop, being the most valuable of any one we produce, is worthy the greatest consideration. How to increase the yield of our great staple may well be the study of every farmer in the country. There is little danger of growing too large a crop. Corn not only furnishes bread to a large portion of the population, but other acceptable and useful articles of food to many more; it is the basis of our pork, lard, and bacon production; it helps to grow and fatten much of our beef; it aids in producing a large portion of our mutton and wool; it is the material for most of the starch that is made; it supplies most of the alcohol that is used in the arts, as well as a large share of that which is wasted—or worse than that—as a beverage; it is made to yield a fair syrup and much gum that is used in various art processes, and all of the uses to which it is or may be put are increasing year by year in extent and number. The more we can raise per acre, the cheaper it can be produced, the more extended will be its uses. To raise larger crops then, upon less ground and at less expense than heretofore, will add to the profit, and to this end the skill and energy of the farmer should be closely devoted.

Hints about Work.

Plowing for Corn.—There is no better ground for corn than a well top-dressed sod. The nearer the plowing of this can be brought to the time of planting the better. The seed quickly germinates in the moist fresh soil; the cut worms are busy upon the grass roots and let the corn alone, and the weeds do not start until the corn has had time to get a good growth and shoot ahead of them. The quick growth is greatly helped by some active fertilizer sown on the surface and harrowed in lightly.

Selection of Seed.—It is important that good seed be used. If the best ears have not been selected at husking, or at harvest time from stalks bearing two ears, it would be better to pay a high price for good seed to those who have been more careful, than to take the seed from the corn crib. It is only by carefully selecting the seed for years in succession, that we can improve our present varieties.

Planting Corn.—With the excellent implements we now have for cultivating this crop, there is no need to plant in squares or hills and so waste ground. With rows from 3 to 4 feet apart, the seed may be dropped singly 6 inches to a foot apart. We can have then in the first case 29,000 plants of the small kinds, and nearly 15,000 of the large kinds to an acre. With one good ear to a stalk, the crop would be equal to from 140 to 150 bushels of shelled corn per acre. Why cannot every stalk in a corn field be made to produce a single ear as well as a portion only, when room enough is given? This is what we have yet to learn in the way of growing corn.

"*A good Start*" is a great help in doing anything, but most especially in growing crops. To thoroughly harrow the ground before sowing, to sow the seed while the soil is fresh, and to use some active fertilizer near the seed, but not in contact with it, will give any crop a good start. The common mixture of poultry droppings, wood ashes, and plaster, in equal parts, makes an excellent fertilizer. If mixed while dry, or immediately before using it, no ammonia from the droppings is lost.

Live Stock.—To keep the farm animals in good condition just now when the fresh feed is coming in, requires judgment and watchfulness. A sudden change of feed is generally hurtful. When an animal is found to be ailing, it may be taken for granted that something is wrong with its food or management, and these should be at once looked to for the cause, and the mischief averted. It will be well not to turn the stock out until they have been fed upon their usual fodder, and accustom them to green food gradually.

Horses.—The use of three-horse teams is often a great saving of labor. Three horses with a double furrow plow, or a wide harrow, will often do as much as two two-horse teams separately, and save the wages of one man.

Double Furrow Plows are great labor savers, and are now made with seats for riding, so that "following the plow" from morn to night may be avoided. They may be used upon any smooth ground that is free from large stones, and no good farmer should have his fields so encumbered with stones that he can not use such a plow.

Young Stock should be kept growing from their birth. The science of feeding is becoming much better understood than it has been, and the mixing of different kinds to make the food more palatable and nutritious should be a matter of close study. Food is the raw material from which we make flesh, milk, and wool, and much may be saved by using this material in the most profitable manner. The mother's milk is the best food for young animals, but to this some additional food may be added by degrees, so soon as the digestive powers are capable of assimilating it.

Sheep Shearing.—The value of the fleece is increased by care in shearing. All filthy tag locks should be taken off before the sheep is shorn, and thrown into a basket by themselves. Never roll these up in the fleece. If any cuts are made upon the skin of the sheep, rub a little pine tar upon them. After shearing, guard against cold rain storms. Much trouble in tagging the sheep will be saved if they are kept from the fresh grass or clover after they are washed, and fed hay until sheared.

Milch Cows.—There is often disappointment caused by a falling off in milk when cows are turned upon the new grass and other feed stopped. The young grass is deficient in nutriment and too watery. A good feed of cut hay and mixed bran and meal given once a day will avoid this.

Roots.—Mangels are undoubtedly the best root crop for our climate. Upon good soil, and when well cultivated, thirty tons per acre may be grown easily. The earlier this month the seed is sown the better, but it is not worth while to grow a poor crop upon poor land. Sown in drills 3 feet apart, 4 lbs. of seed are required for an acre. When well up, thin out to 12 inches apart in the rows. Lane's

Improved sugar beet is an excellent root, requiring the same cultivation as mangels.

Fodder Crops.—Mixed fodder crops may be sown at intervals through the month. After the middle of the month, corn will generally be the best crop to plant. This should be sown in drills—*never broadcast*—3 feet apart, and the grains dropped about an inch apart in the drill. Emery's corn-planter does this work well at the rate of 8 acres in a day. Four bushels of seed per acre is required.

Potatoes.—While the Colorado beetle is abroad, early potatoes will be the safer to plant. The beetles are not so numerous early in the season, and those who try, can keep them down without very much trouble. But later on the armies which have been bred and fed by careless farmers will swarm over the country, seeking what they may devour. As they seem to travel always to the east, if they find no late potatoes to consume, it is to be hoped that they will seek them in the Atlantic ocean and perish. For every acre of potatoes about 4 pounds of Paris green should be provided in time.

Haying Machinery.—The scythe should be hung up forever. No modern farmer can afford to use it. If the fields are shapeless and rough, they should be put in proper condition for the mower and hay-rake, or pastured. These implements should now be put into good condition or secured ready for use when wanted. There will be rainy days which may be well spent in doing this.

Working Clothes.—Suitable working clothes that are cheap and convenient are now made so that they can be sent by mail to those who do not know how to or cannot make them. A close fitting suit that can be washed is far the best to wear, and woolen under-clothing should always be worn in the day, and removed and aired at night. A dry well-aired night-dress should always be worn; it is cleanly and healthful, and the sleep is the more easy and refreshing for it. If there are more things to wash they are easier washed, and the work is actually lighter than when the clothing is badly soiled.

Work in the Horticultural Departments.

In all successful culture, weeding will follow closely upon planting and sowing. All work for the destruction of weeds ought to be done, except in small gardens, by horse-power where it is possible, else the expense of a crop will be greatly increased. One fact needs to be frequently repeated, that is, if weeds are destroyed as soon as they appear, or even just before they reach the surface, a great amount of labor is saved; the cost of running a cultivator between the rows in a large garden once or twice a week, is inconsiderable, but after the weeds have once attained much size, the cost of hand-weeding will be more than double. The aim in growing any crop should be to have it carefully cultivated, which in most cases makes the difference between loss or gain in the raising. Provide for succession crops of vegetables by sowing from time to time; there need be no work during the season when there will not be a good selection of vegetables to choose from. Most farmers make one job of planting their gardens, so that when the first lettuce, peas, sweet corn, etc., are past, there is nothing to follow them. Succession crops of many kinds do well if planted even as late as July, and we remember sowing early beets as late as the 4th of July, and had excellent winter roots.

Orchard and Nursery.

Planting.—It is not too late in northern localities to set out trees if they were properly heeled-in early this spring or last fall. All ground in which young trees are set, should be kept cultivated, so that they may have a chance to grow vigorously and ripen their wood properly. If any trees set last fall are found to be bent by winds, these should be straightened up and the soil pressed down firmly around the base of the tree. A few large stones placed over the roots will keep trees in their proper positions, and this is often a good way to dispose of surplus stones; but care must be used in cultivating around the trees, else the weeds will grow rapidly among the stones and rob the trees of much nutriment.

Grafting may be done this month at any time provided the cions were cut before their buds started, and well kept. Trees bearing only inferior fruit may be grafted, and made valuable.

Transplanting seedling trees from the seed-bed to nursery rows, should be done early, so that they will be well established by the time drouths come on. Some means of shading should be used for all young evergreens and other tender trees. For growing trees from seed, shading, etc., see articles in previous numbers on "Tree Planting."

Root-Grafts.—Set at once in nursery rows at a sufficient distance to allow of horse cultivation.

Insects must be fought, and tent-caterpillars, canker-worms, bark-lice, and borers, kept off, and destroyed in some way as soon as they appear

Fruit Garden.

Blackberries and Raspberries may still be set. It is better to plant early, as they start so soon that their growth is liable to be checked by late moving. Provide stakes or wires to tie up the canes properly, so that the ground may be cultivated between the rows by horse-power. If suckers start up between the rows, treat them as weeds, unless more plants are needed.

Currants and Gooseberries.—Better set late than not at all; plant 4 feet apart each way; keep well cultivated and mulch in dry weather.

Strawberries.—Keep the soil between the rows open and mellow until the fruit begins to form, when a mulch of leaves or straw should be given to keep the fruit from contact with the soil; any weeds which appear through the mulch can be hand-pulled. Set out new beds early and mulch to protect the plants from drouths. In small gardens it will pay to water strawberries.

Grapes.—Allow newly planted vines only one cane the first year. As the new growth appears, tie up carefully to wires or other support, and rub off any unnecessary shoots which start. Give the soil between the vines a dressing of ground bone—never use unfermented stable manure if the best results are desired. Cutting out poor and mal-formed bunches as soon as set, will help the rest of the crop; this can only be done in small vineyards.

Dwarf Trees of apples and peaches should be looked to, and the growth shortened where necessary, and any broken or injured branches cut away.

Kitchen Garden.

The present will prove a busy month, as there are many varieties of seeds to sow and plants to set in order to produce a full supply of all the vegetables in their seasons.

Asparagus.—At every cutting cut the whole bed clean, leaving no thin spindling shoots. Cut the shoots well below the surface in a direction slanting away from the stool to avoid injuring the dormant buds. An early dressing of salt, 2 lbs. to the square yard, is beneficial in inland localities.

Beans.—Plant when all danger of frost is over. Put bush sorts in drills 18 inches apart, and plant Limas and other pole sorts in hills 4 feet apart each way; set the poles before the beans are planted; push in the Limas eye down.

Beets.—Early sown sorts will now be large enough to thin out and use for greens. Sow early sorts every two weeks until July, in drills 15 inches apart. Lettuce, if set between the rows, will be out of the way before the beets need the room.

Cabbages.—Hoe the early set plants often, and especially in the morning while the dew is on. Set plants in vacant spots along fences and between young trees, if not shaded too much.

Carrots.—Sow a few rows for early, but defer planting the winter bed until later.

Corn.—Plant when all danger of frost has passed; if too early, the seed will rot before sprouting.

Cucumbers.—Set out early started plants under hand frames in rich hills. If there are no hand-glasses, take old boxes 5 or 6 inches high, remove the bottom, and place them over a hill, and at night cover with a board; a pane of glass may be put on in cool weather.

Egg Plants.—Set the last of the month in rich, warm soil, and hoe often; a little weak liquid manure is very beneficial when they are growing.

Leeks may still be sown. As soon as large enough, transplant; cut the tops off to 3 or 4 inches, and set in rows 18 inches apart and 5 to 6 inches in the row.

Lettuce.—Set out plants and sow seeds.

Martynia.—Seeds sown early this month in a hot-bed, will furnish plants for setting out later, or sow in place when the soil is warm, in either case they should stand 3 feet apart each way.

Melons and Squashes for early may be treated the same as cucumbers, but the general crop must not be put in before the soil is well warmed.

Onions.—Keep the soil loose between the rows, and weed early.

Parsnips sown last month must be weeded and thinned early. Allow 5 to 6 in. between the plants.

Parsley.—Transplant from hot-bed as soon as large enough to handle, and sow seed in open ground.

Peppers.—Set out plants when the soil gets well warmed. Watering with liquid manure is beneficial.

Peas.—Bush the early sown sorts, and plant every week or ten days for succession. Sow Little Gem and other dwarfs in rows a foot apart; they do not require brush like the tall kinds.

Potatoes.—Cultivate the soil between the rows and keep free from potato-bugs either by hand-picking or the use of Paris green. Plant this month for late crop.

Radishes.—Sow every week for succession, wherever there is room.

Rhubarb.—Do not cut, but pull the leaves, and cut off the flower stalks as they appear.

Salsify and Scorzonera.—Sow early this month if not attended to last; when large enough thin to two inches in the row.

Spinach.—Sow every 10 days in rows a foot apart. Thin and weed the early sown beds.

Tomatoes.—Set out after the weather has become settled, in hills 4 feet apart each way, and as they grow, provide a trellis or some support, or in absence of these, supply brush for the fruit to rest on so that it will not lay upon the ground and decay.

Turnips.—Sow a few for early; when up, sprinkle plaster or ashes on them to keep off the black fly.

Tools.—Have all the tools in good condition to work with, and that after any one has been used, insist on having it returned to its proper place after cleaning. All wooden parts of tools are benefitted by a coat of crude petroleum; it soon dries, leaving the pores full, so that all moisture is excluded.

Lawn and Flower Garden.

Lawns should be put in order early. A top-dressing of any good fertilizer, free from weed seeds, is preferable to manure. Guano is one of the best, applied at the rate of 200 to 300 lbs. to the acre, just before a rain if possible. Where there are bare spots in which the grass has been winter-killed, fresh seed may be sown and raked in, or turf inserted. Mow at least once a week, and unless the grass is long, let it remain to protect the roots.

Perennials should have been divided last month, as many of them start so early that they are injured if distributed later. Keep established beds free from weeds and the soil open and light.

Climbers.—Train and tie up to trellises before they start, so that the buds will not be injured. Towards the end of the month sow or set out from the hot-bed Cypress vines, Madeira vines, Canary Bird flower, etc., and provide trellises or other support. Sweet peas should be sown early and provided with brush three or four feet high.

Flower-Beds.—Do not hurry with the bedding plants, the last of this month or early next, is soon

enough in northern localities. Let them be well hardened off.

Bulbs.—Set bulbs of Lilies, Gladioluses, Cannas, Dahlias, etc., in good, warm soil, and provide stakes for such kinds as require them.

Tuberoses may be started in the hot-bed or in a box in a sunny window, and set out next month.

Wild Flowers.—There are many wild flowers worthy of a place in the garden, and if persons who live in the country would mark these as they come into flower, observe their conditions of growth, and then in fall or spring transplant them to their gardens, they would find an abundance of pleasure as well as flowers, and that too at a slight expense.

Castor-oil Beans.—These make excellent plants for the ornamentation of a lawn either singly or in groups. The seeds should be started in the hot-bed, and the plants set in rich soil as soon as the weather is warm enough for these tropical subjects.

Greenhouse and Window Garden.

Some kind of shade must be provided for the plants which remain in the greenhouse during the summer. This may be effected most readily by white-washing the glass; adding a little milk to the wash will make it adhere better.

Camellias and Azaleas do best if placed outside in the shade, but not under the drips of trees. A lattice-work shed is used where there are many plants. If kept in the greenhouse let them be well shaded, and the house cooled by copious waterings.

Insects.—It will be a good time to clear the house of insects when the plants are partly removed, and all repairs should be done early, so that there will be no delay in the fall.

Horticultural Notes for the Southern States.

Vegetables.—The young crops of vegetables will require constant working; repeated hoeing will keep young plants in continuous vigorous growth; the secret of success with most of our vegetables is to push forward their growth from the beginning and never allow a check of vegetation. A much neglected but most essential matter is watering with liquid manure. This is the most readily absorbed food that can be applied to plants, and nothing will stimulate a healthy and rapid growth more than frequent applications of *weak* solutions of manures. Fowl or fresh barn-yard manure put in a barrel and always kept filled with water, should always be at hand. We say use *weak* solutions, and here must impress the necessity of this. A strong liquid manure will burn up vegetation if the weather is dry, while a weak one, but repeated frequently, will vastly benefit young plants.

Strawberries will in most instances be through their yield toward the end of the month. So soon as the fruiting season is over, give a thorough working to the beds, and afterwards keep free from weeds. This is an important matter; nothing will help the ruin of a strawberry bed more than a crop of weeds. The only method to keep plants healthy and free from being burned up in summer, is clean culture.

Orchards require little care beyond sowing to Cow-peas. The ground must be kept shaded, and nothing will do this more effectually than a crop of Cow-peas sown broadcast early in May. Keep an eye to suckers on young fruit-trees and grape-vines. Pinch in shoots that have a tendency to outgrow others, thus obviating a heavy pruning next fall.

Flower-Garden.—Keep the beds clean and well worked to counteract effects of dry weather, which usually prevails in May. Bed out Coleuses and similar plants. Layer Roses towards the end of the month. Cut back deciduous spring blooming shrubs so soon as out of bloom. Plant Dahlias.

Greenhouses.—Keep well ventilated and free from insects, which now are apt to become numerous if neglected. Shade plants as much as possible; to counteract the effect of copious watering, which impoverishes the soil of pot plants, give occasionally a watering of weak manure water.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending April 13th, 1876, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	281,000	1,062,000	437,000	31,000	198,000	783,000
24 d's *last* m'th	293,000	729,000	1,471,000	33,000	151,000	1,016,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	329,000	2,014,000	891,000	68,000	264,000	971,000
24 d's *last* m'th	346,000	1,911,000	1,617,000	35,000	336,000	811,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1876..	281,000	1,062,000	437,000	31,000	198,000	783,000
26 days 1875..	242,700	601,200	1,782,000	9,000	207,000	529,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1876..	329,000	2,014,000	891,000	68,000	264,000	971,000
26 days 1875..	397,000	2,910,000	2,686,000	61,000	315,000	1,763,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Apr. 10, 1876..	3,393,974	232,140	68,429	200,381	706,282	436,942
Mar. 6, 1876..	4,473,653	302,026	82,562	441,078	757,457	377,378
Jan. 10, 1876..	5,802,293	663,982	100,741	825,191	1,080,300	307,438
Dec. 7, 1875..	5,878,036	816,962	99,908	305,961	1,252,005	258,364
Oct. 11, 1875..	2,382,502	1,682,246	10,910	21,688	439,698	261,428
May 11, 1875..	969,804	1,542,924	16,124	16,537	545,209	229,635
Mar. 8, 1875..	2,665,775	2,274,614	45,756	234,071	854,601	154,978
Jan. 11, 1875..	3,675,122	1,019,900	50,889	191,470	877,014	145,617
Nov. 9, 1874..	3,680,141	1,727,510	19,123	117,185	794,722	135,882

4. *Exports from New York, Jan. 1, to April 10.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1876...	601,000	5,212,000	3,815,000	67,000	—	65,000	261,060
1875...	491,415	4,056,892	3,249,570	33,063	90	33,084	127,000
1874...	612,380	7,330,021	3,048,833	254,340	—	39,581	—
1873...	296,843	1,050,712	3,182,533	1,004	11,830	6,162	—
1872...	217,804	1,873,515	3,579,919	179,320	—	8,730	—

CURRENT WHOLESALE PRICES.

	Feb. 14.	Mar. 13.
PRICE OF GOLD	114 5-8	113
FLOUR—Super to Extra State	$4 00 @ 5 65	$4 20 @ 5 65
Super to Extra Southern	4 00 @ 8 50	4 25 @ 8 75
Extra Western	4 80 @ 9 50	4 85 @ 9 50
Extra Genesee	5 65 @ 7 00	5 70 @ 7 00
Superfine Western	4 00 @ 4 50	4 20 @ 4 65
RYE FLOUR	4 00 @ 5 10	4 25 @ 5 25
CORN-MEAL	2 55 @ 3 45	2 75 @ 3 70
BUCKWHEAT FLOUR, ₩ 100 lbs	1 75 @ 2 25	Nominal.
WHEAT—All kinds of White	1 35 @ 1 55	1 30 @ 1 55
All kinds of Red and Amber	1 00 @ 1 47	1 00 @ 1 45
CORN—Yellow	58 @ 65	70 @ 73
Mixed	61½@ 68	70 @ 72
White	61 @ 69	70 @ 72
OATS—Western	43 @ 52½	43 @ 52
State	43½@ 52½	43 @ 55
RYE	78 @ 87½	86 @ 1 00
BARLEY	70 @ 1 25	70 @ 1 12½
BUCKWHEAT, ₩ bush	60 @ 62	61 @ —
HAY—Bale, ₩ 100 lbs	75 @ 1 10	75 @ 1 15
STRAW, ₩ 100 lbs	65 @ 1 15	60 @ 1 10
COTTON—Middlings, ₩ lb	12¾@ 12⅞	13¼@ 13½
HOPS—Crop of 1875, ₩ lb	13 @ 20	13 @ 19
FEATHERS—Live Geese, ₩ lb	32½@ 60	40 @ 60
SEED—Clover, ₩ lb	14 @ 15	16 @ 17
Timothy, ₩ bushel	2 45 @ 2 75	2 50 @ 2 75
Flax, ₩ bushel	1 65 @ —	1 60 @ 1 65
SUGAR—Refi'g & Grocery ₩ lb	6½@ 9	6¼@ 9⅛
MOLASSES, Cuba, ₩ gal	20 @ 35	20 @ 36
New Orleans, new crop, ₩ gal	45 @ 60	45 @ 60
COFFEE—Rio (Gold)	15 @ 18	16 @ 19
TOBACCO, Kentucky, &c., ₩ lb	5 @ 24	5 @ 24
Seed Leaf, ₩ lb	5½@ 25	5 @ 25
WOOL—Domestic Fleece, ₩ lb	27 @ 56	25 @ 52½
Domestic, pulled, ₩ lb	23 @ 47½	20 @ 45
California, clip	12 @ 30	12 @ 28
TALLOW, ₩ lb	8¾@ 9⅛	8¾@ 8⅞
OIL-CAKE—₩ ton	36 50 @40 00	40 00 @41 50
PORK—Mess, ₩ barrel	22 75 @23 00	22 75 @22 87½
Prime Mess, ₩ barrel	20 50 @21 50	21 37½@21 50
BEEF—Plain mess	10 50 @12 50	11 00 @12 50
LARD, in tres. & bbls, ₩ 100 lb	13 65 @13 67½	12 87½@13 85
BUTTER—State, ₩ lb	22 @ 40	25 @ 43
Western, poor to fancy, ₩ lb	16 @ 35	20 @ 38
CHEESE	5 @ 14¼	4½@ 13½
BEANS—₩ bushel	50 @ 1 70	50 @ 1 60
PEAS—Canada, free, ₩ bu	1 15 @ 1 18	1 18 @ 1 20
EGGS—Fresh, ₩ dozen	14½@ 18	18½@ 21
POULTRY—Fowls	12 @ 20	15 @ 22
Capons, ₩ lb	22 @ 28	26 @ 32
Turkeys—₩ lb	13 @ 17	15 @ 20
Geese, ₩ pair	1 25 @ 2 75	1 00 @ 3 00
Geese, ₩ lb	7 @ 12	9 @ 15
Ducks, ₩ pair	65 @ 1 25	80 @ 1 50
Ducks, ₩ lb	17 @ 22	17 @ 23
Roosters, ₩ lb	8 @ 10	8 @ 10
DUCKS, Wild, ₩ pair	40 @ 1 75	25 @ 1 25
SNIPE, per doz	— @ —	60 @ 1 75
PIGEONS, wild, ₩ dozen	2 00 @ 2 50	1 40 @ 1 75
LETTUCE, hot-house, ₩ doz	50 @ 75	30 @ 75
CUCUMBERS, hot-house, ₩ doz	1 50 @ 3 75	1 75 @ 2 50
TURNIPS ₩ bbl	75 @ 1 00	50 @ 75
CARROTS, ₩ bbl	90 @ 1 25	1 00 @ 1 50
BEETS, ₩ bbl	75 @ 1 25	1 00 @ 1 50
CABBAGES—₩ 100	3 00 @ 7 00	4 50 @ 8 00
ONIONS—₩ bbl	1 25 @ 3 00	2 50 @ 5 50
POTATOES—₩ bbl	75 @ 1 75	50 @ 1 25
New Bermuda, ₩ bbl	7 00 @ 9 00	8 00 @ 9 50
SWEET POTATOES—₩ bbl	2 25 @ 3 75	3 50 @ 4 25
BROOM-CORN	3 @ 11	3 @ 11
GREEN PEAS, Florida, ₩ etc.	4 25 @ 5 00	1 75 @ 3 50
TOMATOES, Bermuda, ₩ etc.	3 00 @ —	1 00 @ 1 50
RADISHES, ₩ 100 bunches	— @ —	87 @ 3 00
GRAPES, ₩ lb	5 @ 8	6 @ 8
APPLES—₩ barrel	1 75 @ 3 75	2 50 @ 4 50
CRANBERRIES—₩ bbl	10 00 @14 00	12 50 @15 00
SQUASH, ₩ bbl	— @ —	1 25 @ 1 75
ORANGES, Florida, ₩ bbl	7 00 @13 00	5 00 @ 9 00

Gold has been up to 114⅞, and down to 112⅝, closing April 12 at 113, as against 114⅝ on March 11, and 112⅞ on Jan. 13... The general course of trade has been indicative of more animation, but with much irregularity in values. The inquiry for supplies for home use have been on a moderate scale, rarely exceeding the limits of urgent wants. The export demand has been comparatively fair, chiefly for Breadstuffs. Provisions, Cotton, Petroleum, Naval Stores, Hops, and Tobacco. The outward movement in Seeds, Leather, Lumber, and Oil-Cake, has been less satisfactory. The ocean freight market has been unusually depressed, and much lower rates have been accepted by sail and steam. Grain rates by steam to Liverpool, closed on the 12th April at 4*d.*, to Bristol at 6¾*d.*; to Glasgow at 6½*d.*; to Hamburgh at equal to 7*d.* per bushel. Provisions by steam to Liverpool, 25*s.* @ 30*s.* per ton; Cotton at ¼*d.* ₩ lb. Grain tonnage for Cork and orders, at 5*s.* 6*d.* @ 5*s.* 9*d.*, though a re-charter of a vessel for 5,000 quarters grain was made on the 11th inst, at the exceptionally low rate of 4*s.* 9*d.* per quarter. Grain rates from San Francisco to Liverpool, for the maturing crop, opened at 60*s*.... Breadstuffs in this market have been fairly active, but variable as to price. Flour closed steady, on ample supplies. Wheat, Rye, and Oats left off stronger, on a better demand. The latest cable reports were of very unfavorable weather in the British Islands for the farming interests, tending to stimulate purchases of Wheat here for shipment, and to strengthen prices. The arrivals of Corn have been recently light, checking transactions. Much of the advance in Corn during the month, was due to speculative manipulations. Rye has been very scarce, and much wanted for home use and exports. Barley has been depressed and unsettled, on liberal offerings, particularly of Canada product, in good part on account of speculative holders.... The Provision business has been active in the line of Pork, Lard, and Bacon, but otherwise comparatively moderate, prices as a rule favored buyers at the close.... Cotton has fluctuated considerably, on an active market, but closed heavily.... Hops have been in good request, and held more firmly toward the close.... Seeds have attracted less attention, the demand having been almost wholly for home trade purposes.... Tobacco has been in more request, but without improvement as to values.... Wool has been offered more freely, and quoted lower, without leading to much activity. Holders have been desirous of closing out supplies of old, before the new clip shall have begun to arrive in any considerable amounts.... Hay has been in better demand at stronger prices.... Straw quiet.

Record of the Pork Packing Season of 1875-6.—The Cincinnati Price Current thus sums up the packing season, now virtually ended: "The detailed returns of packing at the six leading cities compare with last year as follows:

NUMBER OF HOGS PACKED.	1875-6.	1874-5.
Chicago	1,592,695	1,690,348
Cincinnati	563,359	560,164
St. Louis	329,895	362,246
Indianapolis	323,084	278,339
Louisville	223,147	273,118
Milwaukee	181,972	236,596
Total	3,213,522	3,500,811
At interior points	1,602,000	2,065,414
At all points	4,815,522	5,566,226

AVERAGE WEIGHT AND YIELD OF LARD.

	Average net weight.		*Average yield of lard.*	
	1875-6.	1874-5.	1875-6.	1874.5.
Chicago	217.32	212.42	36.32	37.30
Cincinnati	218.95	222.60	37.80	41.77
St. Louis	214.78	192.	36.56	30.
Indianapolis	201.	196.	31.	29.50
Louisville	215.15	209.27	32.40	29.87
Milwaukee	209.83	208.56	30.63	31.15
Total	215.13	209.47	35.47	34.20

MESS PORK MADE.

	1875-6.	1874-5.
Chicago	201.521	216.515
Cincinnati	36,735	38,262
St. Louis	27,022	30,000
Indianapolis	none.	none.
Louisville	15,014	18,628
Milwaukee	19,794	25,950
Total	300,086	329,655

The figures above given show a material falling off in the number of hogs packed, or about 750,000 less this season than last. The better condition of the hogs is shown by the increased average net weight and weight of lard per hog this season. What prospect for farmers for the coming season is foreshadowed by the result of the past one is worth consideration. Hogs are remarkably scarce and many parts of the west are bare of stock. For the past two or three years pork has brought more net profit to the farmers of the west than any other product, and the prospect for the coming season is equally favorable. If nothing occurs to mar this prospect it will clearly be to the interest of farmers to feed all the hogs they can, to push them forward by the best care, and to avoid loss by the prevalent diseases, which, unless prevented by timely precaution, promise to become more destructive than ever before.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
March 20	6,873	90	1,036	13,331	19,268	40,598
March 27	8,087	57	1,225	17,193	20,023	46,585
April 3	8,435	65	1,183	13,288	22,825	45,746
April 10	8,161	23	1,686	15,513	18,683	44,066
Total for 4 Weeks	31,556	235	5,130	59,275	80,739	176,935
do. *for prev. 4 Weeks*	32,664	326	3,190	80,403	94,942	211,525
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	
Average per Week	7,889	58	1,282	14,819	20,184	
do. do. *last Month*	8,166	81	797	20,100	23,733	
do. do. *prev's Month*	8,253	105	859	26,262	25,337	

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
March 20	9 @12½c.	10 @11 c.	10½c.
March 27	8¾@13 c.	10 @11¼c.	10½c.
April 3	8½@13 c.	9½@11 c.	10½c.
April 10	8½@12½c.	9½@10¼c.	9⅞c.

Beeves.—At the beginning of the month the market was strong, with an advance of ¼ to ½c. ℔ lb. on low qualities. Extra qualities are always at the top of the market, and a scarcity of these simply helps the poorer stock. The shipment of 360 of the finest beeves to Europe in one week, had this effect, and now that this business promises to continue, its effect on the market will be watched with interest. Towards the close the market drooped, and gave way more than it had gained. The competition of fish, lambs, and veal, with the best sorts of mutton now coming forward, along with the effect of the lenten season, reduced prices to a low ebb on a very dull market. Dressed beef from Chicago sold for 7c. ℔ lb., and the closing prices were 9 @ 9½c. ℔ lb. for native steers, estimated at 55 lbs. ℔ cwt., to 10¾ @ 11c. for 57 lbs. ℔ cwt., and 11½ @ 12½ for extra, at 58 lbs. ℔ cwt. The sensible attempt to sell beeves on the Chicago plan, by live weight, has been made in this market, and it is to be hoped it will be adopted, to the saving of much figuring.

Cows.—The run of the market shows that farmers are clearing off their poor stock, and keeping back their good cows to take advantage of the high price of butter. Scarcely anything but trash has been offered, and at corresponding prices. One extra cow sold for $80, the bulk of the sales have averaged $56 per head....**Calves.**—An increased demand has kept up prices, and fine Bucks Co. veals sell for 9¼c. ℔ lb., live weight. 8 @ 8½c. was paid for fair calves, and 7 @ 7¼ for common. A few bobs sold for $2 @ $3 per head....**Sheep and Lambs.**—There were never better sheep in the market than in the past month. 100 to 125 lb. sheep have been plenty, and brought 9c. ℔ lb.; good to prime sold for 7½ @ 8½c. ℔ lb., and poor for 6¼ @ 6½ c. A few spring lambs have appeared, and sold for $8 to $9 per head, or 15c. ℔ lb., live weight....**Swine.**—The scarcity of hogs is now apparent, if it has not been previously. The gradually reduced average, as seen in the above figures, makes a firm market and high prices. The receipt of western dressed hogs is now stopped, and only city dressed is quoted. For these the latest prices are 10½ @ 10¾c. ℔ lb. Elsewhere will be seen some figures in reference to the packing business, which are worth notice.

Prices of Feed.

Bran, per ton	$18.00@ $20.00
Middlings, per ton	22.00@ 24.00
Ground Feed, per ton	22.00@ 24.00
Linseed-oil-cake, western, per ton	45.00@ 46.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1, Peruv. Guano (10 p. ct. ammonia), ℔ ton	$54.00@ $55.50
" " (Rectified), per ton	61.50
Mapes' Nitrogenized Superphosphate, per ton	45.00@ 50.00
" Plain Superphosphate (mineral), per ton	30.00@ 35.00
" Bone Superphosphate, per ton	40.00@ 45.00
" Prepared Fish Guano, per ton	35.00@ 40.00
Fish Guano (crude in barrels), per ton	24.00
Bone Black, per ton	25.00@ 28.00
Bone Flour, per ton	40.00@ 45.00
Rawbones Ground (pure), per ton	33.00@ 40.00
Rough Bones, per ton	22.00@ 25.00
German Potash Salts, (25@35 per cent), per ton	20.00@ 25.00
Gypsum, Nova Scotia, ground, per ton	8.00@ 9.00
" In barrels, per bbl	1.25
Wood Ashes, per bushel	16 c.@18 c.
Nitrate of Potash (95 per cent.), per lb	8½c.@ 9 c.
Chloride of Potassium, (muriate of potash), lb	3¼c.
Nitrate of Soda, per lb	3¾c.@ 4¼c.
Sulphate of Ammonia (25 per cent.), per lb	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia	$3.00@ $ 4.00

Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

[READ THIS.]

2 Months and 4 Days.

"Make Hay While the Sun Shines!"

OF UNIVERSAL INTEREST!—Over Fifteen Thousand of our readers have embraced the opportunity afforded by our liberal premium offers, to secure valuable and desirable articles *without cost.* The offers for this Centennial year close **July 4th**—that is in Two Months and 4 Days more. Those having premium lists partially made up, should now complete them, so as to secure the articles desired. And there is ample time for thousands of **others** (including YOU, reader), to still secure **without expense,** some useful article that will a hundred fold repay the little trouble required to get it.

There is nothing fanciful, and no clap-trap at all in this matter. There are tens of thousands of persons, a few at least in every place in the country, who **ought,** for their own **pleasure** and **profit,** to have just the kind of information that is being given in this journal during this year. It would directly and indirectly **pay** them many times the cost, and if they knew about the matter they would certainly have it. The Publishers also desire to reach such persons. But they cannot go and speak to them personally. They wish to have their readers do this. They know that those who once begin to read the paper, usually continue to do so through a long series of years, and they intend to make the paper so valuable that no one will want to cease taking it.

So they (the Publishers) desire to have the *Readers* speak of the paper to their friends and neighbors, and explain its character and utility, so that they will desire to have it, and they are quite willing to **pay** all who do this, much more than is the profit on the subscription for one or two years.

Therefore they offer **valuable articles** (of undoubted good quality and character) to each and **every one** who will take the little trouble required to ask two, or three, or more, neighbors to subscribe. These articles, bought for cash at wholesale, are more valuable and *much better pay than could be given in money.*

This plan works well all round, and has done so for many years. The Publishers secure enlarged circulation. Those assisting in this, get the good premiums *without money expenditure.* Those induced to subscribe are made acquainted with a good paper, and are benefitted.

Now, READER, will you not join in the enterprise? Can you not, *this month* and next, beginning to-day, speak of the paper to those you meet, or take an evening or rainy day to do it, and thus secure two, three, or more names, and send them in? You can select any article you desire from the Premium List, corresponding to the names you send, whether many or few. MANY have found this so profitable, that they have given up everything else, and gone into it as a business, and made large salaries by selling the articles they have obtained. Thousands of others have secured for themselves, *free,* such things as these: **Gold Pens and Pencils—Watches—Fine Table Cutlery—Elegant Silver-plated Articles—Scissors in Cases—Pocket Knives—Boy's Wagons—Children's Carriages—Floral Sets—Microscopes—Melodeons—Pianos—Guns—Rifles—Books, etc.**

Try *your* hand at it *now.* In the next two months and 4 days, (May, June, and July 1-4), you can get one, perhaps several of the above articles, or others of the 100 offered in the Premium List. If you have not kept your copy of the Premium List, send and get another at once; it will be mailed free.

Try it for once, and see how it will work. A little practice now, may pave the way for you to get hundreds of dollar's worth next year.

YOU can do this as successfully and satisfactorily to yourself, as the other 15,000, who have already done so.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

The Doctor to the Youngsters.

In your columns I told you that the lady and gentleman who were to decide upon the prizes for the best dog-story, had not finished their task. There were nearly 200 stories, and they found it very difficult to decide. They think that the

First older boy's prize (between 12 and 16) should go to Frank Zimmermann, Peshtigo, Wis., aged 14. The first younger boy's (under 12) prize to Stuart A. Robinson, Academia, Pa., aged 8. The first older girl's prize to Fussie Eastwood, Port Elgin, Ont., aged 13. The first younger girl's, Nettie B. Woodzell, Cleck's Mill, Va., aged 9.

There are others in each class whose stories are almost as good as those written by the above. I hope next month to give the names of some of those who would have taken the prizes, had not the judges thought these to be rather the best. THE DOCTOR.

The Centennial.—Don't Fail to Celebrate It!!!—If the Centennial tree has not been planted, do it now! One tree is better than none, but better still if a line of them is planted on each side of the road along the whole boundary of the farm. How vastly better for a village to use the money that will be expended for powder on the 4th of July, in lining each street with shade-trees. If too late to get deciduous trees for the Centennial planting, you can at least set evergreens, and a belt of these to shelter the house from prevailing winds, will be a perpetual blessing. Plant trees! A tree! this Centennial year, even if you have to wait until planting time comes next fall.

Refrigerators.—Ice will be dear this summer, and a good refrigerator more than ever necessary for its economical use. A. M. Lesley, 226 West 23rd St., New York, make various styles and sizes which have given satisfaction to those who have used them.

Ho! Boys and Girls!—Every one of you must surely have the Great Centennial Toy, **"Ye Hero of '76,"** which is the finest Toy ever made; it delights old people too. The wide-awake Boys and Girls can have the first ones free (see third cover page of this paper). You will not only get "Ye Hero" yourselves, but everybody you get to subscribe will be benefitted. Why, last month's *American Agriculturist* was alone worth a whole year's subscription, to say nothing of all the other numbers of the year. Go right to work to-day, and be one of the ten thousand who want and get "Ye Hero" right away.

Oyster Shell Lime.—"D. G.," North Brookfield, Mass. Oyster shells freed of all adhering mud and other matters, consist of 98½ per cent of carbonate of lime, 1 per cent of phosphate of lime, and less than 1 per cent of animal matter. When burned they are converted into lime, which is more nearly pure than that from the ordinary lime-stones. It is thought by some to be superior to stone lime as a fertilizer, on account of the animal matter it contains; this is of course an error, as the animal matter is destroyed in burning; it permeates the shell throughout, and its destruction by heat causes the lime to fall to a fine powder. The unburned shells are practically of no value.

Don't Stop Yet.—If you have commenced getting up a club of subscribers for the *American Agriculturist*, with a view to securing one of the good Premiums, and have not yet gathered quite as many as needed to get the particular Premium article you want, don't stop yet, for the offers, according to our List, will be continued right on until July 1st. You can secure many subscribers in this and the two following months. Try.

Acknowledgement.—The editor of the Canada Farmer writes us that the illustration of the corn marker, which appeared in the *American Agriculturist* of April, had been previously published in the Farmer. We are glad to give this excellent journal due credit for this fact, although at the time we published the article, this was not known to us, as we received the engravings from a correspondent in Canada, and supposed him to be the inventor and manufacturer of the implement. We regret the mishap all the more for the reason that the Canada Farmer always generously acknowledges its occasional indebtedness to the *American Agriculturist*.

Over 200 Exhibitors Appear in our "Exposition" columns this month, with their varied announcements of things wanted by the hundreds of thousands who read these columns. Those in charge of that department are instructed to "admit no quacks or quackery, and only those who have the ability and the intention to do what they promise to do in their advertisements." Our readers will find it profitable to take a stroll all through this department, not only to find the best places to get what they want, but also to gather useful business hints by seeing what others are doing, what they say, and how they say it. It is always well when corresponding with these men in ordering, inquiring, sending for circulars, etc., to inform them that you made their acquaintance through the pages of the *American Agriculturist*, it will do no harm, and may be of double advantage.

Potatoes and the Moon.—"F. A. C.," Leavenworth, Kan., wishes to know "some of the ifs, whys, and wherefores potatoes should not be planted in the *light* of the moon."—This takes a considerable study, and while we are thinking over this vast problem, will our correspondent inform us why a stone, pushed from the roof of a building, always goes directly upwards; why on the 31st of April people do not shut in the sunlight, and save using lamps or gas. "F. A. C." wants the "scientific" reason for this moon business—so do we.

Cattle Foods.—Under this name two classes of articles are offered; one to be given occasionally, in case of loss of appetite or indisposition from a slight cold, and another to be used daily with the regular feed of the animals. As it is well to administer a light laxative and tonic when an animal is "out of sorts," and as it is more likely to be given if ready prepared and at hand, than if one has to hunt up the several different ingredients, we have, upon learning the composition of these foods, and finding them to contain such articles as are proper to administer, allowed some of them to be advertised. With the other class, those which are to be fed regularly and daily, the case is different. We have before us the circular of one which claims to reduce the cost of feeding, by using this as a part of the regular feed, and to greatly improve the health and condition of horses, oxen, cows, and poultry. We have no hint as to its composition, except that it contains "several strengthening roots and aromatic barks," from which we infer that it is proposed to feed the animals upon highly seasoned food. In answer to those who have asked our advice in this matter, we would say, that we would not feed animals regularly upon anything the composition of which is kept secret. "Aromatic barks" are of course stimulants to the digestion, and though their effect at first may appear to be beneficial, their tendency will be to create a demand for more, and the animals so fed will have an artificial appetite. If at any time this stimulus is discontinued, an immediate falling off in condition will be the result. An animal in good health needs no medicine, or stimulant, no matter by what name it may be called; if it has all the sound wholesome food it needs, it will do better in the long run than one that has been pampered by artificial feeding. Many of our readers may recollect the great popularity of Thorley's Cattle Food some 20 or more years ago, which was extensively used in England, and was becoming popular here; it made animals beautifully plump and sleek; but when an analysis showed that this result was due to the considerable amount of arsenic it contained, its use was at once discontinued. This illustrates the folly of feeding regularly any food the composition of which is kept secret.

ATTENTION!

Farmers and Gardeners.

Special Premiums.

$2.60 for $1.60.

NEW POTATOES FREE.

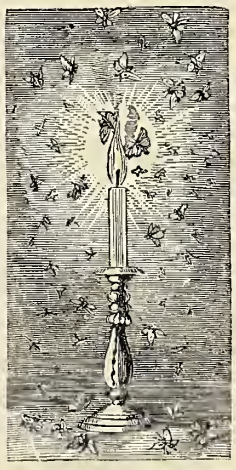
The Early Rose Potato, largely spread through the agency of the *American Agriculturist*, has proved a vast benefit, worth tens of millions of dollars to the Country. NOW

A New Potato, the **"Alpha,"** promises as well as the Early Rose did, or *better*, it is claimed. It seems to be the earliest Potato yet grown. At a recent meeting of the London Horticultural Society, well ripened Alphas were shown in pots only 53 days from planting. It received the silver medal of the Massachusetts Horticultural Society. Its quality is excellent. Owing to the yet very small supply, it is sold at $1 per pound for the single pound (this is but one-third the first price of the Early Rose). The Publishers of the *American Agriculturist* have secured 750 pounds of *genuine* Alphas, which they will distribute as follows: **To any subscriber sending in one new subscription for the American Agriculturist for the present year, 1876, at the regular price of $1.60 a year, including postage, the Publishers will send a full pound of the Alpha Potatoes, in a box, post-paid. Names for this premium can count in no other list, and it will only be given to those sending names specially for it.**

This amount, cut to single eyes, and carefully cultivated, will yield quite a large lot of seed for next year's planting. This potato promises to be of great value, and even if it should not turn out all that is expected of it, it will cost the recipient nothing but the little trouble required to find and forward the name of a single subscriber.

This offer will extend to the first 750 names received. Doubtless all who respond promptly, will come in time for the distribution and receive the potatoes.

Sundry Humbugs.



One of the questions which most frequently meet our eyes is, "Is this a Humbug?"—This comes very often with reference to circulars of various schemes, or the writers description of them. We regard this as a sign that people are becoming more cautious, and are disposed to examine the bait for the concealed hook. Most persons have a fair share of common sense; this is often over-ruled by a desire for gain, or silenced by flattering protestations and promises; but if it were allowed to act in regard to the various swindling schemes as it is in the every-day affairs of life, fewer would be humbugged. There seems to be a peculiar fascination of things from a distance, and one who will believe that a $50 watch can be sold in New York for $4, would not look at a $4 watch if offered for sale in his own place. However, it is a healthy sign that people stop long enough to ask—"Is this a humbug?" and it is very safe to assure such that anything presented to them in such a manner as to raise this question in their minds, is just the very thing for them to let alone.

SOLDIERS' PENSIONS.

There was a bill before Congress a while ago which had reference to pensions to those who served in the late war. While there was not the least chance that this would pass, some kind of a clerk or other attaché, at once began to collect the names of those who would be benefitted by the law should it pass, and is ready to pocket his little percentage. We advise in this as in other cases, to sign no contracts whatever with unknown parties, even if named Smith. The number of

SMALL SWINDLES,

concerning which complaints are made is large, and some of them amusing for their insignificance; here is one of them. A young man in Michigan writes that he sent 25 cents to a concern in New Haven, Ct., which advertised to send for that sum an "elegant false mustache." He never received any return, and as he writes that he has never seen this particular swindle mentioned among our Humbugs, we infer that he wishes us to expose the parties. We confess that we do not feel very unhappy over the loss of that 25 cents, as a false mustache is in itself a fraud, and the young man has bought for a very small sum a lesson that others pay many dollars for. One of the most rascally of all humbugs is that of selling recipes for

DANGEROUS BURNING FLUIDS,

under the claim that they are safe. One called "Excelsior Fluid" emanates from Chicago, and is quite as pernicious as any of those we have heretofore noticed. This is made by adding to one gallon of Gasoline, one teaspoonful of alum, one tablespoonful of salt, and a piece of Alkanet Root to color it. Nothing can be more dangerous than this. Gasoline is one of the products obtained in refining petroleum, and as it is produced largely while there are few uses for it, it is cheap, and as dangerous as it is cheap; it boils at 120°, and makes an inflammable vapor much below that, and any attempt to introduce this into use in lamps should be a punishable crime. The addition of alum and salt under the pretense that they make the stuff less dangerous, is a bare-faced fraud; they can have no more effect than the use of so much sand; the alkanet to color, is to make the liquid appear different from what it is—one of the most dangerous things that can be kept in the house. One recipe for using this dangerous stuff, recommended the addition of sliced raw potatoes! No matter however mixed and muddled with, its character will remain the same, and there is no safety save in the perfect avoidance of this and all similar liquids as burning fluids.... Few persons living in New York have any idea of the

"MARVELLOUS THINGS"

it contains; it is only those who live at a distance and get the circulars that are sent out who learn of the many chances of making money that are offered to people who will undertake the sale of the various gimcracks they offer. We have before us a collection of these circulars which are sufficiently remarkable to be framed and hung up among the curiosities at the Centennial Exhibition. The Brazillian Perfume Stone, from that remarkable cave, the location of which is definitely given, as being "in a secluded ravine at the foot of the Andes Mountains in Southern Brazil." The Empire of Brazil does not anywhere reach within some hundreds of miles of the Andes, but it ought to, for the circular says so, and gives a picture of the cave. It is just possible that there are people simple enough to believe in the existence of such a stone. The jewelry and watches offered by these concerns is surprising for its *cheapness*. Then there are all sorts of cheating cards, washing fluids, corn scrapers, ventilated garters, and numerous other things out of which many dollars a day can be made by agents if they can only sell them. But these traps are nothing compared to the wonderful books offered. There are half a dozen or more of these clap-trap shops, not only in New York, but in New England, New Jersey, etc., each of which has a book of "secrets" which if they are half as remarkable as the advertisements, must be something stunning. Singularly, these books, usually by some "Doctor" are advertised so nearly in the same terms, with the same lists of contents, that we suspect they must differ only in their title pages. The purport of them all is to show people how to make money. They are simply collections of recipes for making articles that cost little, and if one can sell them, money will flow in. The trouble is in selling them, as the chances here are very small. These books cost from 50c. to $1, and it does not take those who purchase them long to find out that even at these prices they are poor investments.

EYE CUPS AND EAR DRUMS.

The venders of these flood the country with their circu-

lars, and we notice that one dealer also offers to sell coffee and tea. We have so often expressed our opinion in this matter that we cannot afford the time to answer the many letters of inquiry in regard to them. These eye cups assume that all troubles with the eyes are due to a want of a proper convexity of the eye-ball, and the venders of them propose to remedy this by mechanical means. This teaching is pernicious, as very few of the difficulties of vision depend upon a malformation of the eye, which is a most complicated and delicate organ, and subject to many derangements that can be reached by no mechanical means whatever. We advise no one to have anything to do with eye cups, artificial auricles, or any other appliance to the eye or ear, or to use any remedy whatever for troubles with these organs, without first ascertaining, through an examination by a competent physician or surgeon, the exact cause of the defect. To assume that all difficulties of sight or hearing are due to one cause is to make a grave mistake; to attempt to treat either organ yourself is a graver one.

MEDICAL MATTERS

have been very dull of late, but we have one new-comer in Doctor D's "System Renovator and Blood Purifyer." The manner in which the various recipes for wonderful medicines are discovered and preserved to the world, seems almost miraculous; one cannot read about old Mother Noble, without an affection for the dear "old critter," but when he peruses the record of our beloved Eddie Eastman, if he has a single "bowel of compassion" about him, it must be "moved." Then there was that miraculous picking up a recipe in a bottle upon the seashore; the wonderful discovery of Uncle Joe's Bell-tongue syrup all along of the Injuns. But this System Renovator comes about in a more civilized way, and it is all pictured out on the circular. There is D's father on his death-bed, remarkable as to appearance, the lack of hair "on the top of his head" being made up by the amplitude of his flowing beard. Old D. is about to die, but he must first reveal "the secret of his great discovery," so "all who had assembled at his bedside," except young D, were bidden to retire, and then the old D. "pointed to an old-fashioned bureau," instructed him to touch a "secret spring," a drawer was opened, and there were the recipes for making the "System Renovator, etc." Now this is a decent way of doing it; no savages—no far off mountains in South America—no picking up bottles on the sea shore—no visits to England to see the dear "old critter," Mother Noble—no visiting old Franz Ganswein to learn how to stew up "Seven Barks," but all done decently and in order. You just touch a secret spring in an "old-fashioned bureau," and there are your recipes. If you don't believe it, see the picture. This medicine has a remarkable motto, "Truth is mighty, and will prevail." We have a faint impression that we have seen that somewhere before.... "The Indian Blood Syrup" circulars, the same that Eddie Eastman discovered during his "7 and 9 years among the Camanches and Apaches," are still going about the country; and the man in New York still sends over to Jersey City for letters directed to Clark Johnson, M. D....The "Seven Barks" man, while his remarkable circular is printed in the language of the "world's people," has a "Confidential to Agents" wherein he, as a correspondent expresses it, "comes the Quaker dodge." Rarely have more "thee's" and "thou's" been put into so small a space; in fact it is overdone, as we rarely find "Friends" saying "thou wilt" and "thou shalt." It's a pretty cute dodge, but we judge from our correspondence that some of our Quaker friends feel scandalized at this resort of the "Seven Barks" man....The cure for consumptives advertised for which one Adee proposes to send the recipe free, is as we sometime ago stated, merely a dodge to sell something that is not procurable elsewhere. The recipe may be "free," but the medicine prescribed can only be had at a particular place.

DOUBTFUL SEEDS AND OTHER THINGS

in which the humbugging is more in the manner of offering than in the articles themselves, are noticed elsewhere.

Basket Items continued on page 193.

The New York Horticultural Association.

At the monthly meeting of the Association, on April 5th, the attendance was larger than at any previous meeting, and included many of the best known nurserymen, florists, and private gardeners in the vicinity of the City, and quite a number of amateurs. The display of plants and cut flowers gave every indication that at the regular exhibition in June, New-York will have no reason to be ashamed of her new Society. The largest collection of plants was exhibited by Wm. Bennett of Flatbush, L. I., who had a number of fine grown Orchids and other plants, among which were four varieties of *Cypripedium barbatum*, namely: *grandiflorum*, *giganteum*, *majus*, and *purpureum*, and the remarkable *C. caudatum*, with its tail-like petals 18 inches in length, and *Epidendrum macrochilum roseum*, another interesting Orchid; also a fine grown specimen of *Medinilla magnifica*, with its racemes of rose colored flowers 9 in. in length; *Dracæna splendens*, with crimson and maroon striped foliage, a specimen of the Fern *Adiantum Farleyense*, and cut blooms of the snow-white Carnation, Peerless, of which Mr. Bennett is now cutting, from one greenhouse, 20x100—10,000 flowers per week. He also had cut blooms of the new Blue *Veronica*, "Madame Vilmorin," and Rose "Duchess of Edinburgh."....From Saml. B. Parsons & Sons, Flushing, L. I., a collection of the Dwarf Japan Maples, that are probably destined to give an entirely new feature to our lawns and shrubbery, as they are doubtless as hardy as other deciduous trees and shrubs from Japan usually are. They are named *Acer Japonicum* and *A. polymorphum*, and run into the most wonderful varieties of form and color, in shape similar to some Ferns, and in color, rivaling the fancy-leaved Caladiums....From Chas. Zeller, of Flatbush, L. I., were cut blooms of some 25 varieties of beautiful Carnations, mostly new sorts....From John Henderson, Flushing, L. I., a new hardy plant, *Armeria Cephalotes alba*, and the double and rose-colored Lily of the Valley....From Mr. Vass, Copake, N. Y., a *Primula sinensis*, with variegated (yellow and green) foliage, a fine healthy plant, which, if it can be successfully propagated, will be valuable.... From Geo. Such, of South Amboy, N. J., a fine collection of Camellia blooms; also cut Orchid flowers, among which were *Angræcum sesquipedale*, *Epidendrum Stamfordianum*, *Cattleya speciosissima*, *Cypripedium Stonei*, (having 4 expanded flowers on a stem), *Chysis bractescens* and *C. Limminghi*....From Peter Henderson, Jersey City, N. J., six varieties of new variegated Geraniums, and a variety of the well known winter-flowering plant, *Begonia hybrida multiflora*, with variegated leaves.... From David Deans, Bay Ridge, L. I., a splendid specimen of the well known Orchid, *Bletia Tankervilliæ*....From Isaac Buchanan, Astoria, L. I., a dwarf Palm in flower, of some 5 feet in hight, to the stem of which, growing in moss, were clustered some six or eight species of Orchids, mostly in bloom, among which were some beautiful varieties of *Cattleya*, *Lælia*, *Miltonia*, etc., giving a good idea of how "air plants" grow in their native woods. The proper location for a Hall for the June Exhibition was discussed, and the Committees to get up the schedule of prizes to be then offered arranged.

New and Wonderful Seeds.

Every year many traps are set to catch the farmer and gardener, in the shape of plants and seeds. We hardly know whether to treat these cases under *Humbugs* or not. Often the plants themselves are well enough, if one wants them, but they are so overlaid with ridiculous claims and ambiguous descriptions, that whatever the plants may be, those who offer them appear to ordinary comprehension to put out these statements "The same with intent to deceive." Take the "Japan Pea," for example. We have no doubt that this, when properly introduced on its real merits, will prove a valuable plant in some parts of the country. But we are told by those who have recently made a fuss about it, that it has "recently been brought to this country from Japan," whereas it was in cultivation 15 or 20 years ago. Then again, the peas have been offered as "unsurpassed for table use," and we quite agree with a Texas correspondent, who boiled them for 20 hours without reducing them to an eatable state, that the writer of that "must have undergone a long fast when he ate his Japan peas." Our correspondents say that in all localities, where cotton will ripen, especially where there are long drouths, the Japan pea is likely to be a productive and valuable plant. Now it is offered to the country at large as a "new" pea, to produce "200 bushels to the acre"—with no distinction made between Maine and Texas—moreover, as a table pea, and disappointments will be numerous. The plant will fail of proper appreciation, all because of the preposterous statements of those who offer the seeds—or rather of some of them, for we are happy to say that Mr. M. W. Johnson, of Atlanta, Ga., offers it on its own merits, as he would any other seed, with no nonsense about it....Here is another case. A concern offers the "Spanish nut, Chufa or Souchic," as a "new esculent." Oh very "*new*," it having been introduced into Europe in 1597, and it has taken a "spurt" in this country every now and then ever since we can recollect—and we are no chicken. "Will sell for $5 per bushel in any market,"—what for, we wonder. "Frost does not injure it,"—more's the pity then, else how are we to get rid of the pernicious weed? We had always understood that one of the claims of the thing was that frost *would* kill it, and thus keep it from being the miserable nuisance that its own brother, the "nut-grass," is in the southern states. There may be places where it will pay to plant chufa as a food for hogs to harvest themselves, but for the last third of a century, the quantity cultivated has been growing small by degrees, and beautifully less. We do not say that the old and well known Chufa (*Cyperus esculentus*), is a humbug, but we do say that the claims made for it belong to that class....The "Rabourdine Corn" is offered as having every good quality that can be expected in any corn; more than this, it "will yield two or three times as many bushels per acre," but it is not stated what this yield is compared with, and we are allowed to suppose other corn, as we are warned not to buy of seedsmen "Old-Fashioned Corn, viz:" and here follows a list of the sweet and popping corns, though not a word is said whether this is a sweet or a popping corn. The funny part of this story is that this wonderful variety originated, of all places in the world, "in the Isle of Wight!"....Here we have a wonderful setting forth of the surpassing virtues of "Hughlitt's Ivory Wheat," and numerous have been the letters asking us what we think of it. We think in the first place that the stuff is not a wheat at all, that is, the grain of *Triticum*, generally known in agriculture and in commerce as *wheat*. We draw our conclusions from the statements in the circular, wherein we are told "The grain of this wheat is small, plump, and heavy, of a whitish color, and weighs 70 pounds to the measured bushel." That "its growth is different from all other grades of wheat, one pint being sufficient to plant an acre." The grains of the stuff are sold by count. Now we hazard the guess that this "Ivory Wheat" is nothing more than a form of the old *Sorghum vulgare*, which as Indian Millet, Dana, Guinea corn, or Durra corn, is a food plant in Africa, and which has been offered, in one shape or another, as a valuable plant from time to time during the present century. According to the circular, one man has raised 122½ bushels to the acre. Supposing one could raise 1,000 bushels to the acre, what could he do with it? There is no place in America where he could find fools to buy it as *wheat*, and it could not be sold for flouring under any other name, as the American people, even the poorest, have not got over a prejudice in favor of having their bread made from "the finest of the wheat." This grain may be useful for chicken feed, for animals in general, and even as human food, but to call it a variety of *wheat* is simply a misnomer.....Now cometh Franklin Lindsey, who liveth in Virginia, and haveth nothing less than *Saccharum officinarum*, or Saccharine Sugar Cane. F. L., "Saccharine" as applied to sugar cane is good, in fact nothing short of a stroke of genius. The talk about sugar cane in general is rich reading, but when we learn that the making known of this **Saccharine** plant [full-faced type, if you please, Mr. Printer], not exactly is, but "seems to have been one of the many special interpositions of Divine Providence in behalf of this nation," we get kind'er awe-struck, and when we read that as early as 1868 it was cultivated from Wisconsin to Florida, we wonder where we have been all the while, while a plant has been going around, the juice of which "when boiled down, or reduced by evaporation, [nothing like being exact in one's statements], the result is a superior article of pure crystalline **SUGAR**, [fullface caps, Mr. Printer, if you please]. Far surpassing the southern or West India sugars in *strength of sweetness, color, and crystalline purity*, [italics here]. Moreover, we read that "this plant is adapted to our soil and climate, and is even a surer crop than Indian corn." We get no hint as to its culture, except that: "Its early maturity renders it peculiarly adapted to the *short seasons* of the north," while we have a great farrago of other stuff about the various inducements to buy the seeds, which sell at $3 a "package," whatever that may be. To all of this we have to say that *Saccharum officinarum* belongs to the true sugar cane, and to that only, which so far from being hardy in Wisconsin, as Lindsey says, it is killed anywhere by a severe frost. Moreover, in no sugar-growing country is the true sugar plant, *Saccharum officinarum*, raised from seeds, nor is it known to *produce seeds* in cultivation. It is then evident that of whatever else this Lindsey may offer seeds, they cannot be, as he claims, those of *Saccharum officinarum*, or the true cane which produces the sugar of commerce. That this person has a way of misusing botanical names, is shown in the same circular in which he offers "**Ozmorhiza**" as a beautiful dwarf evergreen "which was sent to him from Yeddo, Japan." The name does not belong to "an evergreen" at all, but to herbaceous plants, common in our woods, and known as "Sweet Cicely." Nor does it bear "white" or any other kind of "berries." This man Lindsey has upon the first page of his circular a portrait; he advertises for a *partner* to superintend his two gardens, "but as I am not a married man, I shall reject any proposition from my own sex." All of which we regard as very modest, sweet, and lovely, but as a matter of private opinion, we do not think there will be a great rush of applicants.

Ogden Farm Papers.—No. 75.

BY GEORGE E. WARING, JR.

G. J. Comstock, Marcellus, Mich., has bought 300 bushels of ashes, (at 15 cts.); 2,000 lbs. of bone-flour, ($42); can get plenty of gypsum four miles away, ($3 per ton), and lime at 20 cents per bushel. Dirty salt costs him $3.50 per ton. Good muck is available two miles away. He asks how, out of these materials, to make the best manure for barley, oats, corn, and tobacco. He asks if he can mix bone dust with good, hardwood ashes and salt, using gypsum as a divisor and absorbent, and in what proportion these shall be mixed. Also, "How can I manufacture superphosphate of lime from bone-dust?"

The simplest way to use these materials, and one that would undoubtedly give a satisfactory result, would be to use the salt at the rate of four or five bushels per acre, as a top-dressing by itself; to use the gypsum as a top-dressing on clover, early in the spring, and not more than two bushels per acre; to use the muck, so far as it is used at all, in compost with stable manure; to use the ashes alone as a top-dressing; and to use the bone-flour in the same way. There is no doubt that with judicious application as to quantity, these would all be profitable—less so perhaps in the case of the muck, than of the other materials, because of the serious amount of labor involved in hauling and composting muck, and because of the further fact that it is now very well established that the best use that can be made of stable manure, is to apply it in its freshest state, as a thin top-dressing for mowing lands.

The value of the bone-flour would be very much increased by making it into superphosphate. The usefulness of superphosphate is not to be measured by the average experience of ordinary farmers in using the superphosphates of commerce, for the reason that many of these are so adulterated and "scamped" in manufacture, that they are almost worthless, and have tended to bring down the *average* value of all. There is no question but that a well made superphosphate of lime, with a sufficient addition of nitrogenous matter, is worth, for nearly all uses, quite all that is charged for it, but farmers are so dependent upon the statements of the sellers, of whose honesty they have no adequate means for judging, that where bone-dust and sulphuric acid can be procured at reasonable cost, it is the wisest plan to make the article at home.

The preparation of home-made superphosphate seems to have been so materially checked by the commercial supply, that it has never become a well defined branch of farm economy, and it is significant that of all recipes that I have thus far seen not one is an improvement on that prepared for the Royal Agricultural Society of England by W. C. Spooner, and published in the Society Journal for 1846. From this, (and from a paper by Professor Way, Chemist to the Society, published in the Journal for 1851,) I condense the following facts and recommendations:

Way gives the following analysis of raw bone:—

Water, fat, cartilage, and gelatine	48.
Phosphate of lime, with small quantities of phosphate of magnesia	46.
Carbonate of lime	4.
Alkaline chlorides, sulphates, etc	2.
	100.

What we have to consider in making superphosphate from bone, is the 46 per cent of phosphate of lime, and the 4 per cent of carbonate of lime. The phosphate of lime is to be converted into a superphosphate (soluble, and much more valuable) by the use of sulphuric acid, but the first action of the sulphuric acid applied will be to unite with the lime of the *carbonate*, and so much acid as is needed for this purpose is practically lost, and it is only what is applied in excess of this that reacts upon the phosphate.

Pure sulphuric acid does not exist, it is always combined with more or less water. The heavy acid, called oil of vitriol, contains a little over 80 per cent of real acid; the brown liquid, or "chamber" acid, contains only about 60 per cent. Making due allowance for this difference of strength, and supposing the cheap chamber acid to be used, the four pounds of carbonate of lime in one hundred pounds of bones will take about five pounds of the acid, and the forty-six pounds of phosphate of lime will require for its conversion from thirty to thirty-five pounds of chamber acid; if the amount used is too little, a part of the phosphate will remain unchanged, and will produce its effect on the soil much more slowly; if too much acid is used, the surplus will react on other matters contained in the bone-dust, or on constituents of the soil, and no harm will be done. Mr. Spooner's directions for the practical domestic manufacture of superphosphate from bones are very simple, and seem to obviate most of the difficulties that are usually experienced.

When sulphuric acid is mixed with one-fourth of its weight of water, the temperature of the mixture is raised to 300 degrees, and this increase of heat he uses as a valuable accessory in reducing the bone-dust. He advises the use of a sugar hogshead standing on its end, the bung stopped with plaster of Paris, and the top open. Into this, put four bushels of bone-dust, and sprinkle it very evenly with an amount of water equal to one-fourth of the weight of the acid, and stir up the mass so that all parts of the bone shall become uniformly moistened. On a stand as high as the top of the cask place a carboy of acid, and as sulphuric acid is dangerous to handle, and much injury is often caused by splashing in attempting to pour it, he recommends the use of a siphon, which may be a bent lead-pipe having a faucet and a rose sprinkler at its lower end. Fill the siphon with water, closing the short arm with the finger (to keep the siphon full), and quickly insert this short arm into the carboy. Then open the faucet, and nearly the whole of the acid will be discharged into the cask, where it will set up a seething combination with the water—and as the water is diffused throughout the whole mass of bone, it will serve as an attraction to carry the acid to exert its decomposing influence in every part of the material. During the process, there will be an escape of heated and foul smelling fumes of carbonic acid and organic matters. While these are escaping, the workman should be careful not to inhale them. He should be provided with a fork or other implement for stirring the mass, approaching the cask from the windward side, and mixing it as thoroughly as possible. Within a short time, when the heat has subsided sufficiently not to evaporate the next dose of water, the same process may be repeated with a fresh supply of bones, water, and acid, and may be continued with proper intervals until the hogshead is nearly filled. After two days, the mixture may be removed and shoveled into a heap, to remain until wanted, or, if needed for immediate use, it may be mixed with enough gypsum, or dry peat, or *coal*-ashes, to absorb its surplus moisture. This handling will render the mixture fine enough to use with a drill. It is of the greatest consequence that the water first used for sprinkling be mixed as uniformly as possible with the bone-dust, so that the sulphuric acid may be attracted to every part of the mass, and even with the best care in this respect, the result will be improved by a considerable amount of stirring.

The mixing of bone-dust with hard-wood ashes, even when gypsum is used as an absorbent, is hardly to be recommended, both because in such admixture the potash of the ashes would have a tendency to throw off ammonia from the decomposing bone dust, beyond the capacity of the gypsum to absorb it, and because a better use can be made of both materials, by using them differently. Ashes are valuable for reducing whole bones, thus saving the cost of grinding. Put the bones and ashes together, well mixed, (the ashes filling all the interstices between the bones,) into a hogshead, under cover, and keep the mass well moistened. In time the potash uniting with the fatty parts of the bones, and reacting on its organic matter, will cause such a disintegration of their substances that they can easily be crushed, and made into a useful fertilizer. Though the pulverizing effect thus obtained is vastly inferior to that produced by the action of the sulphuric acid, in decomposing the phosphate of lime in the bones, still it is the best cheap and easy way to reduce large bones, and makes a manure that proves very effective, even when used in so small a quantity as twenty bushels per acre. Where both ashes and refuse bones are available, it offers an extremely useful and economical means for obtaining a valuable special fertilizer—particularly valuable for grass and grain crops, and when used at the rate of fifty bushels an acre, is a good dressing for turnips.

A House Costing $1,200 to $1,300.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This economical cottage has ample, convenient appartments for a medium sized family, and is adapted to either a village or a more rural location.

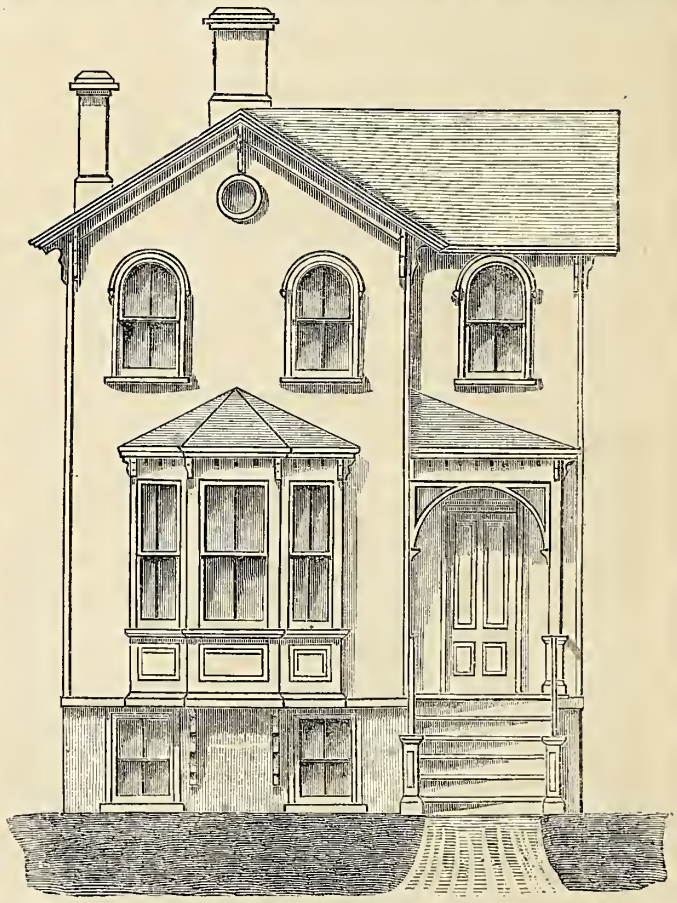


FIG. 1.—ELEVATION OF FRONT OF HOUSE.

A 25 x 100 feet lot will contain such a house, besides the needed side alley way to the rear. Those contemplating the creetion of low-priced, tasteful cottages in duplication, either for selling, or by coöperation as in Building Associations, will find this plan suited to their wants.... **Exterior,** (fig. 1).—The front presents a graceful, trim outline, with a neat and pleasant arrangement of openings. The Porch fits in an angle, with its steps projecting beyond the principal building, providing

an appropriate entrance to the house. The large Bay Window is the most imposing feature of the front, is expressive of comfort and cheerfulness, and gives a good appearance and character to the whole building. The principal cornices are neatly trussed, and have such "spread" as gives a finished and bold appearance to the roofs. It has such pro-

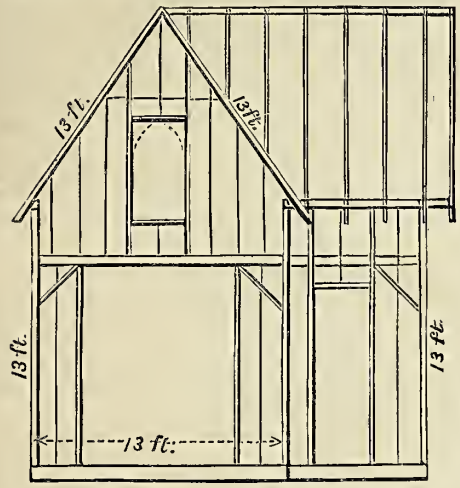


Fig. 5.—MANNER OF FRAMING.

portions and genteel style, that if near a more formidable or costly residence, it would not disgrace it....**Cellar,** (fig. 2).—Hight 7 feet. Its outlines correspond with the ground plans of the principal building; it is 3 feet below the general surface of the ground, and 4 feet above, and has an outside entrance door, three good sized cellar windows, two of which are in the front, and one at the side, contiguous to the coal-bin. It is accessible from the first story by a plain stairway. If desirable at any time, a pleasant basement room may be finished in the front part, at a small cost....

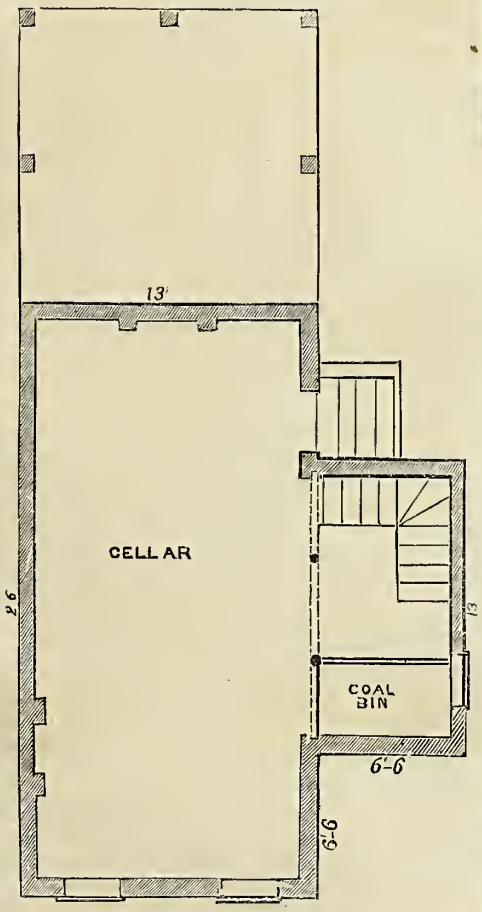


Fig. 2.—PLAN OF CELLAR.

First Story, (fig. 3).—Hight of ceilings 9½ feet. It is divided into three rooms of nearly equal size, with a Hall and two Closets. The Bay window adds considerable to its area, making it the largest and pleasantest room. The Dining-room adjoins the Parlor, and may be used with it as occasion requires, by opening the folding doors. Each of these rooms has neat marble mantles, and opens into the front hall. The Kitchen connects with the Dining-room, and is provided with a pantry, pump, sink, two windows, and an outside door leading to the rear yard. When houses are built on single village lots, it is usual to arrange for one "blank" side, as in this plan, but where more ground is allowed, it is desirable that openings should be made for at least one window in each story of this side, as they would add to the cheerfulness of the interior, and give a better appearance to the outside. Two windows are thus indicated by dotted lines, one for the dining-room, and one for the interior chamber, though the latter is lighted from the roof, as noted. It may be advisable even to put two other windows on this side of the house, for the outside general good appearance, or blind windows may be put in at small expense, for the same purpose....**Second Story,** (fig. 4).—Ceilings 8 feet high. The divisions are very simple, making 4 rooms, 3 closets, a stairway, and passage leading to each room.....**Construction.**—Reference is had in this plan to what is known in the trade as "piece lumber"—the joists, wall strips, boards, etc., being generally in lengths of 13 feet each. There is great economy in being able to use such standard lumber, without cutting to waste. Figure 5 shows how a neat, cosy cottage may be cheaply constructed almost wholly of such 13-feet materials. But there is a decided preference for full chamber ceilings, and as the difference in cost would not exceed $60, it is best to make the house *two full stories high.* The principal frame is of 3-inch timber, with studding of 2 x 3 inch. This thickness of the framework secures some 220 feet more interior space to the rooms, than in the use of 4-inch timber, besides saving one-fourth of its quantity and cost. Ordinary 1¼ x 10 inch spruce plank are used for the frame work for the floors and ceilings. For the beams they are reduced to the depth of 8 inches, and the 2-inch strips sawed off are used for shingling lath. For the ceiling frame of the Second Story, they are simply sawed through the middle, leaving each half 5 inches deep, and are all placed 16 inches apart from centers. One row of cross bridging is put through the center of each tier of beams, and the center of the ceiling strips are secured by hangers from the rafters. The Rafters are 2 x 4 inches, framed to rest on the principal plates, where they are connected with the ceiling strips by spikes, preventing any settling or spreading of the roof. The Roof of the main wing is constructed with double pitch, corresponding with that of the main roof. The principal roofs are finished with shingles, and the improved gutters, described on page 173, May *American Agriculturist*, 1875. The Porch and Bay window roofs are covered with tin laid on smooth boarding.—The *rake* or *pitch* of roofs has much to do in giving character and finish to buildings. For ordinary roofs, when shingles or slate are used, the rise should be *one-third* the width of the building, as in this case, the rise is 4½ feet, for the width of 13 feet. This pitch is very pleasant to the eye, and easy of construction. In larger buildings it is often desirable to secure more space or head room in the Attic, when the rise should be *one-half* the width of the building. We would never go *between* these two angles in search of a roof line that would gratify good taste, or comport with any style, but deviations above ⅓ or below ½ may be made, as circumstances indicate.—Circular openings covered with blinds, in each gable, give free air circulation between the ceilings and roofs. Every dwelling should have some way of readily reaching the roof from the inside, to clean the gutters, repair the roof or chimneys, and in case of fire in the house or in the neighborhood. An opening is made in the ceiling of the middle chamber, (fig. 3), over and just inside the door, and thence through the roof. This is neatly boarded around its sides, forming a "well," and is covered at the top with a *sash*, sloping with the roof, hung so as to be easily opened and closed by a cord from the inside. This provides for light, ventilation, and a scuttle in combination. A sash, hung on center pins to revolve, over the door of this room, transmits light from the sky-light to the second story passage and stairway, and supplies ventilation....The Mason's work is complete and

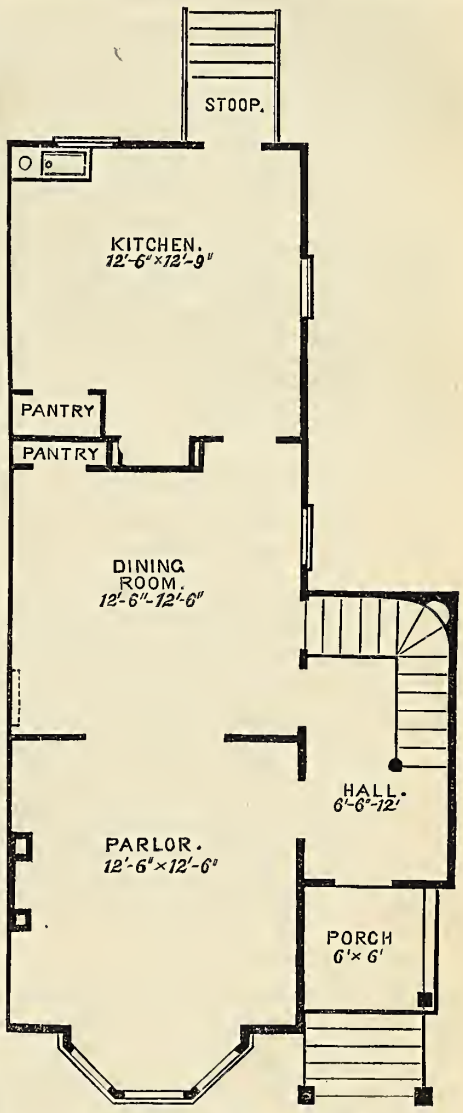


Fig. 3.—PLAN OF FIRST FLOOR.

substantial in every part. The foundation walls, piers, and chimneys, are of hard brick and mortar; the plastering is two coats of brown mortar, and a hard finish....*Heating.*—Only two fires are re-

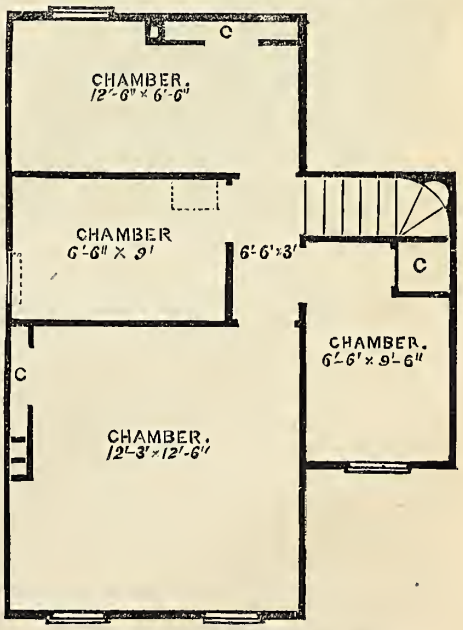


Fig. 4.—PLAN OF SECOND FLOOR.

quired at any time, to make the principal rooms of this house comfortable. The Parlor, and chamber immediately above it, are warmed through a heater

placed in a parlor fire-place. The dining-room has a radiator fitted in the opening of the mantel, and connected by 5-inch pipes through the fire-place back, with the kitchen stove.

Estimate of Materials and Cost.

40 yards Excavation, @ 25c. per yard	$ 10.00
12,000 Brick furnished and laid @ $14 ₩ 1,000	168.00
32 feet Stone Steps, and Coping, @ 20 c. per ft	6.40
450 yards Plastering, @ 30c. per yard	135.00
1,969 feet Timber, @ 2c. per ft	39.38
viz. 1 Sill, 4x8 in. x 39 ft. long. 6 Posts, 3x8 in. x 20 ft. long.	
1 Girt, 4x8 in. x 13 ft. long. 1 Tie, 3x6 in. x 104 feet long.	
1 Plate, 3x4 in. x 104 ft. l'g. 1 Sill, 2x4 in. x 91 ft. long.	
116 Studding, 2x3 in. 10 ft. l'g. 153 Studding, 2x3 in. 9 ft. l'g.	
70 Planks for Beams and Ceilings, @ 25c. each	17.50
55 Rafters, 2 x 4 x 13, @ 13c. each	7.15
208 Siding, 10 inch, @ 26c each	54.08
100 pounds Tarred Felting, @ 3c. per lb	3.00
Materials in Cornices, Water-table, and Corner Boards	20.00
165 Shingling Lath, @ 6c. each	9.90
28 bunches Shingles, @ $1.50 each	42.00
200 feet Gutters, Leaders, and Roofs, @ 8c. ₩ ft	16.00
96 pieces Flooring, @ 26c. each	24.96
Stairs, complete, $ 0; Porch and Stoops, complete, $40	90.00
Bay Window, complete	60.00
8 Windows, complete, @ $12 each	96.00
3 Cellar Windows, complete, @ $6 each	18.00
15 doors, complete, @ $9.50 each	142.50
Closets and Shelving, $8; Mantels, $30	38.00
Pump and Sink, $18; Nails, $15	33.00
Painting, $100; Cartage, $20	120.00
Carpenter's labor not included above	100.00
Total Cost, complete	$1,250.57

Bee Notes for May.

BY L. C. ROOT, MOHAWK, N. Y.

Bees will require most constant care in May, if we are to reach desired results. From the time they are placed upon their summer-stands, we should secure every advantage for brood-rearing, and should furnish artificially those essentials which are not naturally afforded. In the April Notes we gave the first requisites. As the number of bees increases, and it becomes necessary to add combs, those in the hive should be spread apart and the empty ones placed in the center. It is generally best to add but one at a time, which the queen will usually fill with eggs in a few days, when another may be added. Watch the natural supply of honey, and if a time should come when none is gathered, feed moderately. If several rainy days occur in succession, feeding should be continued. At this time feed a syrup of 3 lbs. of "A sugar" to a quart of water.

Transferring.

There is probably no way to secure straight, even worker combs in movable frames, with so little trouble and so satisfactorily, as by transferring. After much experience, I find no better time for transferring from the box-hive to movable frames than just as the apple-trees begin to blossom. The room for the operation should have all but one window darkened, so that all bees that leave the combs will draw to the light one. The hive to which the bees are to be transferred, should be placed under the window in such a position that the bees may be readily brushed into it at the close of the operation. Have in readiness the different articles described below. After smoking the bees slightly in the hive you desire to transfer, turn it bottom up, and place an empty box over

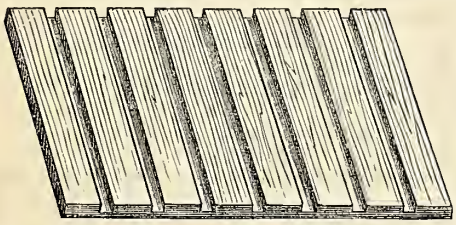


Fig. 1.—TRANSFERRING BOARD.

it, the same size as the hive. By tapping the hive gently, most of the bees will leave it and enter the upper box. When most of the bees have left the old hive, place the box upon the old stand, leaving the side raised a little at the front of the stand, for the bees to go in and out, and remove the hive to be transferred to the room selected for the operation. Place the hive bottom up on a box, or other support, about two feet high. With a small common hand saw, saw the combs and cross sticks loose from the side or sides you desire to remove. If the combs run square from side to side, it will often be necessary to remove but one side; but if they run from corner to corner, it will be best to remove two sides. If the grain of the wood runs up and down, split the sides to be removed with an ax in several places, and take out each piece separately; but if the grain runs across, pry them off with a chisel. During all operations use care not to crush any bees that remain in the hive. Upon a table or bench near by, place a transferring board (fig. 1) about the size of the frame. Grooves, ¼ inch wide and ¼ in. deep, are made at intervals of about 2 in. across the board. Cushion the surfaces between these grooves by tacking on several thicknesses of cloth, to prevent injury to the brood when the comb is laid upon it. Now, with a thin sharp knife, remove the outside combs, brush off the bees with a light wing, and set them one side, until you come to one containing brood. Place this upon the board above described, so that it will occupy the same position as it did in the hive it was taken from, or if, as is often the case, it will cut to better advantage by turning it half way round, bringing the top to the end of frame, this may be done. Place the frame over the comb in such a manner as to bring the brood as

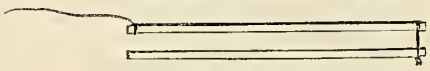


Fig. 2.—WIRED STICKS.

near the top and rear of frame as possible, as this is the warmest position in the hive. With the thin knife cut the comb to fit in this position. If the combs are not large enough to fill the frame, use from the combs first removed to fill out with. Have in readiness transferring sticks (fig. 2), ¼ in. square and ⅝ in. longer than the depth of frame. Fasten two sticks together at one end with a piece of fine annealed wire, long enough to bring them about one inch apart. Fasten one end of a piece of wire to the other end of one of the sticks, leaving its other end loose. In this way sticks will be in pairs ready for use. Push the end of the stick without the loose wire through the grooves where the comb needs support, and fasten to the end of the other stick by winding the loose wire snugly around it, which will hold the comb firmly in place. Use a sufficient number of sticks, as shown in figure 3, to keep it all snug. Do not let the sticks come across the brood any more than is absolutely necessary. Place the frame in the hive it is to occupy, and proceed with the next brood-comb in the same manner. Let them occupy the same relative position as before, keeping the brood as compact as possible. If there are combs without brood sufficient to fill one or more frames, place

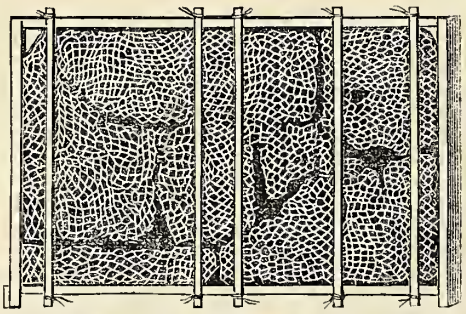


Fig. 3.—THE COMB FASTENED INTO FRAME.

them on the outside, leaving the brood in the center. Cut off all round finished edges, and avoid cutting the combs to waste; all pieces too small for use in the frames, should be kept for beeswax. Drone comb should be reserved; if white, save it for guides in surplus boxes; if dark, put it in frames for extracting. Brush all bees from the window with a wet wing into the hive, and take to the old position on the stand. Empty the bees from the box in front of the hive, and see that all enter. Contract the entrance, and in all ways prevent robbing. Remove the transferring sticks as soon as the bees have sufficiently fastened the combs. For their first experiments, beginners should select a hive with old, tough and straight combs.

Questions and Answers.

"How much increase in swarms would you advise?"—My rule is, just as little as possible, and prevent desire to swarm. Sometimes the removing of one comb is sufficient. From some colonies it will be necessary to remove nearly all the combs supplying them with empty frames. In no case would I advise more than the doubling of the number of colonies, and if swarms are light at the time of swarming, would not advise even that.

Science Applied to Farming.—XVII.

BY PROF. W. O. ATWATER.

More about Exhaustion and Enrichment of Soils.—Cropping.—Weathering.—Fertilizers.—Wrong and Right Ideas.

Inquiries from various sources call for more detailed statements on the subjects of Exhaustion of Soils and Manuring. I very much wish that all interested in these topics could read a Lecture by Prof. S. W. Johnson on "Exhaustion of Soils and Rotation of Crops," in the Report of the Conn. Board of Agriculture for 1871. In this are set forth more clearly, concisely and accurately than in any other brief treatment of the subject with which I am familiar, some very important principles relating to the

Exhaustion and Supply of Plant-food in Soils.

Some of these may be briefly stated as follows: Chemical science has established the facts that every crop requires a variety of materials for its support. Part of these ingredients of plant-food are supplied in abundance by the atmosphere. The rest must come from the soil. Every ordinary soil contains the whole list of soil-ingredients of plant-food. To be useful to the plant, however, these must not be locked up in rocks or partly decayed vegetable matter, but be in an available form. In many soils the available supply of one or more of these is deficient, and hence the crops are small.

Removal of Plant-food from the Soil.—Cropping, Leaching, etc.

This available supply of plant-food is removed in various ways. The chief source of loss in the ordinary practice of farming is in the removal of crops. A good deal is also leached out by drainage waters; that is to say, it is dissolved by the water in the soil and conveyed below the reach of the roots of plants, and away in springs and streams. The loss of phosphoric acid in this way is slight, that of sulphuric acid, lime, magnesia, potash, and nitrogen, is more important. Considerable nitrogen is also lost through chemical changes by which it is unloosed from its compounds in the soil, and escapes in a free state into the air.

Re-supply of Plant-food to the Soil.—Weathering. Atmospheric Supply.—Manuring.

The re-supply of plant-food thus removed may be provided in various ways. We may, as Prof. Johnson says, "rely upon those processes by which the original rocks of the earth's surface have been converted into nutritive soil. We can await the operation of the natural agencies which are involved in what we call 'weathering,' the action of water and of the carbonic acid and oxygen in the air. When we leave the land in fallow—which is practiced much less now than formerly—these processes go on in the soil and prepare a quantity of plant-food for the crop of another year....By active tillage, throwing up the soil, so that it is exposed more fully to the air, and by drainage, if this be necessary to insure access of the atmosphere, this process may be hastened. Most saline fertilizers, such as common salt, nitrate of soda, superphosphate of lime, and plaster of Paris, also act in a similar way to dissolve the elements of the soil, and thus prepare them for the crop; so that, although these fertilizers may, in some cases, do nothing towards feeding the crop directly, they help to feed it by this indirect action in dissolving and bringing into active form the materials which the soil contains in abundant quantity, but in an inert state...."

A small amount of fertilizing material is brought from the atmosphere into the soil by rain and snow, and certain investigations seem to indicate that some is also absorbed from the air by the soil. All crops, when removed, leave considerable, and some, as clover, a great deal of food-material behind in the form of roots and stubble, to enrich the soil for the succeeding growth. This is a very important matter in the rotation of crops.

To quote once more. In brief, "Exhaustion is the reduction of the producing capacity of the soil below the point of profitable production, and depends either on the absolute removal of certain materials, or their removal to such a point that the supply is below the demand of the crop, and such removal must be compensated either by suitable fertilizing applications, or by making the unavailable materials still present in the soil available by fallow, tillage, etc."....Each one of the topics thus casually treated is worthy of considerable discussion. Let us, however, confine ourselves for the present to two principal ones, noticing how much of different materials is removed from the soil by various crops, and how much is restored by various manures.

The following table, which I translate from a much more extended one in the German Farmers' Diary, frequently referred to in these articles, will

aid us greatly in studying this subject, and I most earnestly recommend it to the reader's careful and studious attention. It gives the composition of a great many different kinds of plants and manures, and contains, in a very small space, a very great amount of most useful information. The table from which it is taken, was compiled from several thousands of analyses, made at the Experiment Stations and elsewhere, by a large number of chemists, who have devoted, in the aggregate, doubtless hundreds of years to investigations of plants and manures. The figures represent, of course, general averages. The analyses are, with very few exceptions, European. The plants would not differ greatly in composition from those grown in this country. The difference in the composition of a given kind of manure, is much wider than in that of plants. Stable manure, as is well known, is extremely variable in character. The commercial fertilizers of the table, are of the higher grades, and, in general, considerably better than the average of those in our markets. I hope to be able to give more detailed figures and accounts of some of these articles hereafter.

TABLE 31.

For Calculating the Exhaustion of Soils by Crops and Enriching by Manures. Average quantities of Water, Organic Matter, Ash, Nitrogen in Organic Matter and Potash, Lime, Phosphoric Acid, and other Ingredients in Ash, of Fresh (Green) and Air-dry Materials.

A.—PLANTS.

VEGETABLE MATERIALS. 1000 LBS. CONTAIN	Water derived thro' Soil from Air.*	Organic Matter, Derived mostly from atmosphere.*	Mineral Matter or Ash, Derived wholly from Soil.*	Nitrogen in Organic Matter, Derived mostly from Soil.*	Ingredients of Ash. Potash.	Soda.	Lime.	Magnesia.	Phosphoric Acid.	Sulphuric Acid.	Silica.
GRAIN AND STRAW.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Wheat, grain	143	849.1	13.0	20.8	5.3	0.4	0.6	2.0	7.9	0.1	0.4
Wheat, straw	141	845.3	3.2	46.1	6.3	0.6	2.7	1.1	2.2	1.1	31.2
Rye, grain	145	837.4	17.6	17.9	5.6	0.3	0.5	2.1	8.4	0.2	0.4
Rye, straw	151	835.6	2.4	40.5	7.8	0.9	8.5	1.1	2.1	1.1	22.9
Oats, grain	149	819.8	19.2	21.0	4.4	0.6	1.0	1.9	6.2	0.4	2.0
Oats, straw	111	855.0	4.0	49.4	8.9	1.2	3.6	1.6	1.9	1.3	19.6
Indian Corn, grain	155	843.0	15.0	13.0	3.7	0.2	0.3	2.0	5.9	0.2	0.2
do. stalks and leaves	149	855.2	4.8	41.9	9.6	6.1	4.0	2.6	5.3	1.2	11.7
Buckwheat, grain	111	841.6	11.4	11.8	2.7	0.7	0.5	1.5	5.7	0.2	0.1
Buckwheat, straw	150	837.0	13.0	51.7	24.2	1.1	9.5	1.9	6.1	2.7	2.9
Beans	111	818.2	49.8	39.7	13.1	0.4	1.5	2.2	11.9	0.8	0.2
Bean straw	130	803.7	13.3	43.9	13.5	1.1	9.8	3.3	8.2	1.6	3.2
Peas	133	825.2	35.8	23.5	9.8	0.2	1.2	1.9	8.6	0.8	0.2
Pea straw	143	846.6	10.4	44.0	10.1	1.8	16.2	3.5	3.5	2.7	3.0
HAY.											
Average Meadow Hay	141	841.8	14.2	51.5	13.2	2.3	8.6	3.3	4.1	2.4	13.9
Timothy Hay	113	833.7	18.3	62.1	20.4	1.5	4.5	1.9	7.2	1.8	22.1
Red Clover Hay	157	811.7	21.3	55.9	18.3	1.2	20.0	6.1	5.1	1.7	1.4
Swedish Clover Hay	157	803.5	21.5	39.7	11.0	1.2	13.5	5.0	4.0	1.6	1.6
Lucerne (Alfalfa)	167	823.0	23.0	62.1	15.3	1.3	26.2	3.3	5.5	3.7	3.8
GREEN CROPS.											
Young Grass	800	194.4	5.6	20.7	11.6	0.4	2.2	0.6	2.2	0.8	2.1
Timothy Grass	700	234.6	5.4	21.6	7.4	0.5	1.6	0.7	2.	0.6	7.7
Fodder Rye	700	235.7	4.3	16.3	6.3	0.1	1.2	0.5	2.4	0.2	5.2
Fodder Corn	800	193.8	3.2	12.0	4.3	0.5	1.6	1.4	1.3	0.4	1.7
Clover in blossom	800	194.7	5.3	13.7	4.4	0.3	4.8	1.5	1.4	0.4	0.8
ROOTS (tubers) & TOPS.											
Potatoes, tubers	750	246.8	3.2	9.4	5.7	0.2	0.2	0.4	1.6	0.6	0.2
do. vines, nearly ripe	770	225.1	4.9	19.7	4.3	0.1	6.4	3.3	1.6	1.3	0.9
Turnips, roots	900	89.2	1.8	7.3	3.3	0.7	0.8	0.3	0.9	0.8	0.1
Turnips, tops	803	99.0	3.0	11.9	2.8	1.1	3.9	0.5	0.9	1.1	0.5
Sugar Beets, roots	816	182.4	1.6	7.1	3.9	0.7	0.4	0.5	0.8	0.3	0.1
Sugar Beets, tops	840	158.0	2.0	9.6	2.8	2.3	0.9	1.1	1.2	0.7	0.2
Carrots, roots	860	137.9	2.1	7.8	2.8	1.7	0.9	0.4	1.0	0.5	0.2
Carrots, tops	803	186.9	5.1	26.0	2.9	5.2	8.5	0.9	1.2	2.0	2.9
—o—											
Hops, entire plant	140	778.6	81.4	?	20.1	2.8	18.1	6.4	7.5	3.7	16.4
Hops, the cones	120	813.2	66.8	?	23.0	1.4	11.1	3.7	11.2	2.4	11.1
Tobacco, leaves	130	759.0	51.0	46.0	30.3	5.1	3.8	17.7	4.8	5.8	13.5

* See explanations below.

B.—MANURES.

FERTILIZING MATERIALS. 1,000 (or 100) LBS. CONTAIN.	Water.	Organic Matter.	Ash.	Nitrogen (in Organic Matter.)	Ingredients of Ash. Potash.	Soda.	Lime.	Magnesia.	Phosphoric Acid.	Sulphuric Acid.	Silica and Sand.	Chlorine and Fluorine.
ANIMAL EXCREMENTS. 1000 LBS. CONTAIN	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Stable manure, fresh	710	245	44.1	4.5	5.2	1.5	5.7	1.4	2.1	1.2	12.5	1.5
do. moderately rotted	750	192	53.0	5.0	6.3	1.9	7.0	1.8	2.6	1.6	16.8	1.9
do. thoroughly rotted	790	145	65.0	5.8	5.0	1.3	8.8	1.8	3.0	1.3	17.0	1.6
Dungheap liquor	932	7	10.7	1.5	4.9	1.0	0.3	0.4	0.1	0.7	0.2	1.2
Fæces, fresh	773	193	29.9	10.0	2.5	1.6	6.2	3.6	10.9	0.8	1.9	0.4
Urine, human, fresh	933	24	13.5	6.0	2.0	4.6	0.2	0.2	1.7	0.4	..	5.6
Night soil, fresh	935	51	16.0	7.0	2.1	3.8	0.9	0.6	2.6	0.5	0.2	4.0
COMMERCIAL FERTILIZERS. 100 LBS. CONTAIN.												
Peruvian guano	14.8	51.4	38.8	13.0	2.3	1.4	11.0	1.2	13.0	1.0	1.7	1.3
Dried blood	14.0	73.0	7.0	11.7	0.7	0.6	0.7	0.1	1.0	0.4	2.1	0.4
PHOSPHATES.												
Bone meal, average	6.0	33.3	60.7	3.8	0.2	0.3	31.3	1.0	23.2	0.1	3.5	0.3
Bone-meal, from solid parts	5.0	31.5	63.5	3.5	0.1	0.2	33.0	1.0	25.2	0.1	3.0	0.2
do. from porous parts	7.0	37.3	55.7	4.0	0.2	0.3	29.0	1.0	20.0	0.1	3.5	0.2
Bone black, fresh	6.0	10.0	84.0	1.0	0.1	0.3	43.0	1.1	32.0	0.4	5.0	..
Bone black, spent	10.0	6.0	84.0	0.5	0.1	0.2	37.0	1.1	26.0	0.4	15.0	..
Bone ash	6.0	3.0	91.0	..	0.3	0.6	46.0	1.2	35.4	0.4	6.5	..
Baker guano	10.0	9.0	81.0	0.5	0.2	1.2	41.5	1.5	34.8	1.5	0.8	0.3
Jarvis guano	11.3	8.2	80.0	0.4	0.4	0.3	39.1	0.5	20.6	18.0	0.5	0.2
Navassa phosphates	2.6	5.4	92.0	0.1	..	..	37.5	0.6	33.2	0.5	5.0	0.1
SUPERPHOSPHATES.												
Rectified Peruvian guano	13.0	41.9	42.1	10.5	2.0	1.2	9.5	1.0	10.5	15.0	1.5	1.1
Baker g'no, superp'sphated	15.0	6.2	78.8	0.3	0.1	0.8	25.9	0.9	21.8	28.5	0.9	0.2
Navassa " ..	15.0	2.5	82.5	..	..	?	17.0	0.3	15.4	19.5	2.3	?
Boneblack " ..	15.0	8.0	77.0	0.3	..	0.1	25.0	0.7	16.2	21.0	9.3	..
Bone-meal " ..	13.0	23.8	63.2	2.6	0.1	0.2	22.4	0.7	16.6	19.5	2.5	0.2
MISCELLANEOUS.												
Sulphate of Ammonia	4.0	..	..	20.0	..	..	0.5	..	..	58.0	3.0	1.4
Nitrate of Soda	2.6	..	..	15.5	..	35.0	0.2	..	..	0.7	1.5	1.7
Plaster	20.0	..	80.0	..	..	..	31.0	0.1	..	44.0	4.0	..
Gas-Lime	7.0	1.3	91.7	0.4	0.2	..	64.5	1.5	..	12.5	3.0	..
Sugar-house Scum	34.5	24.5	41.0	1.2	0.2	0.6	20.7	0.3	1.5	0.3	9.1	0.1
Ashes, Evergreen Trees	5.0	5.0	90.0	..	6.0	2.0	35.0	6.0	4.5	1.6	18.0	0.3
Ashes, Deciduous Trees	5.0	5.0	90.0	..	10.0	2.5	30.0	5.0	6.5	1.6	18.0	0.3
Leached Ashes	20.0	5.0	75.0	..	2.5	1.3	24.5	2.5	6.0	0.3	20.0	.
Peat Ashes	5.0		95.0	..	1.5	0.8	?	1.5	0.6	1.3	?	0.2
Anthracite Coal Ashes	5.0	5.0	90.0	..	0.1	0.1	?	3.0	0.1	5.0	?	..

Several correspondents inquire how much their soil is "exhausted" by different crops. From the table let us make a calculation. Suppose that a given plot of ground produces grass enough to make, when mown and dried, one ton of hay. Of the different substances in this 2,000 pounds of hay, how much of each was furnished by the soil? If we were to keep a wisp of this hay for some time in a warm oven, the *water* which it contains would be dried out. If we should put the dried hay in the fire, the *organic matter* would be burned up and pass off as gas or smoke, leaving the *mineral matters* in the form of *ash*.

Now, as was explained in the March number, the plant derives all its mineral matter from the soil. But with the organic matter the case is different. Its carbon comes mostly, if not entirely, from the air. Its hydrogen and oxygen, (the components of water), are supplied in one way or another from the air, but through the roots in the soil. But the nitrogen, though furnished to some extent by the air, *comes mostly from the soil.* So in our calculation of materials which our crops take from the soil, we have to consider the *nitrogen* only of the organic substance, and all the ingredients, potash, phosphoric acid, etc., of the ash. To find

What is Removed from the Soil in a Ton of Hay,

we have simply to multiply the figures which stand opposite "average meadow hay" in the table, and give the number of pounds of each substance in 1,000 pounds of hay, by two, to find the amount of each in a ton of two thousand pounds. We should have 103 lbs. nitrogen, $26\frac{2}{5}$ lbs. potash, $17\frac{1}{5}$ lbs. lime, $8\frac{1}{5}$ lbs. phosphoric acid, and so on. As explained above, these are average figures, and are not claimed to be absolutely correct for any individual case. Any farmer in this country can calculate from this table, how much material is taken from his field by a given number of pounds of hay or wheat, just about as accurately as he could estimate his own weight from that of the average man in Europe. It is to be earnestly hoped that investigators in this country may have the encouragement and support needful for the study of our farm products, such as has been done on the other side of the Atlantic.

By comparing the composition of the manures with the crops, an idea may be formed of how the former restore what the latter take away from the soil, and how much of different fertilizing materials will be needed for production of a given crop.

A Word of Caution.

If soils were all alike, and if we knew just what they contained; if we could tell how much of their plant food is in form to supply the wants of crops, how much is removed by other means than by cropping, and how much re-supplied by tillage, weathering, and the indirect action of manures, and if, finally, climate, moisture, and other conditions were uniform and favorable, calculations of formulas for fertilizers would be easy, and farming by tables quite a simple business. But such is unfortunately not the case, as every farmer knows only too certainly.

But I am making this article too long already. So we will resume this discussion another time. Meanwhile let me request any readers who may be interested in these subjects as treated here, and do not keep files of the *American Agriculturist*, to at least preserve the above table for future reference.

Conn. Agricultural Experiment Station, Middletown.

Artificial Fertilizers.—Parties who "Guarantee" their Wares.—Last month, page 154, the form of contract or *guarantee* was given by which manufacturers and dealers stipulate with the Connecticut Agricultural Experiment Station to supply fertilizers. The following parties have entered into the agreement, thus guaranteeing farmers in that State that "they will get what they pay for." In *Connecticut:* In New Haven: The Quinnipiac Fertilizer Co., Messrs. Strong, Barnes, Hart & Co., L. B. Bishop, and Robert B. Bradley & Co..—In Hartford: Messrs. Chas. L. Willard, Rodney Kellogg, and F. Ellsworth.—In Middletown: Southmayd & Gardener.—In Milford: George W. Miles.—In Middlefield: Messrs. Geo. W. Miller and P. W. Bennett.—In Norwich: John P. Barstow.—In Northfield: Messrs. Peck Bros.—In East Haddam: Messrs. D. B. Warner & Son.—In Hebron: John S. Wells.—In Stratford: W. E. Wheeler. Outside of Connecticut—N. Y. City: Messrs. H. J. Baker & Bro., Hobson, Hurtado & Co., Manhattan Blood Guano Co.. Chas. V. Mapes.—Boston, Mass: Messrs. W. H. Bowker & Co., Soluble Pacific Guano Co., Matfield Fertilizer Co.—In Springfield, Mass: J. A. Byrnes.—In Linden, N. J.: Russel Coe.

Forest Tree Planting.—Evergreens.

FOURTH ARTICLE.

The restricted space makes our article necessarily brief—yet a few remarks upon evergreens are timely. Whatever other tree planting may be done for profit, some evergreens should be set out for shelter and ornament—not that some of these are not profitable for timber also, but just now we have special reference to their use as wind-breaks, and for ornament. Even ornament in this case is not without its money value, for should one ever wish to sell his place—a far too frequent occurrence—the cost of the trees would be many times returned in the advanced value they would give the estate. If one has determined to raise his evergreens from seed, he must care for his seed beds for one or two years, and as small trees are sold at such very low rates by several who make a special business of raising them, most persons will find it cheaper to purchase than to raise them from seed. Small trees of two kinds are usually to be had: wild seedlings, pulled up from the forest, and those which have been raised in a nursery. Then one can obtain nursery trees one or two years old, direct from the seed bed, or those which have been once or twice transplanted, the latter being larger and more expensive. Young seedlings, whether native or from the seed bed, should be first set in nursery rows, and if small, or from the woods, should be shaded. Trees 6 in. or less in hight, may be set out in beds in rows from 6 to 10 in. apart, and 3 to 6 in. in the row, according to size, and protected from the hot sun by a screen of lath or of brush. Trees that have been transplanted in the nursery, should be set in nursery rows. 30 in. apart, with the plants 6 to 12 in. apart, according to their size, and have a heavy mulch; partly decayed straw or other litter may be used. The small seedlings may grow in the bed for one or two years, and then be set in nursery rows, and the larger ones may remain two years in the rows before setting in their permanent localities. Those who wish to produce an immediate effect, can procure trees 20 to 30 or more inches high at moderate rates; these having been several times transplanted or root-pruned, which produces the same effect, may be placed at once where they are to grow. There is no point upon which there is greater difference of opinion than the proper time for transplanting evergreens; not only have spring and fall planting their advocates, but there is a difference of opinion as to wheth-

er early or late spring is the better season. The time is of more importance with large trees than with small, as the dealers take up their small stock in advance, and the trees can almost always be had in a dormant state. For larger trees, probably the time when the swelling of the buds shows that vegetation is active, is the best, if one can have a choice, but better earlier than later, when the new growth has actually begun. We have moved trees with success when the new tender shoots were 3 to 4 inches long, but we had only about 5 miles to bring them, and a damp spell immediately followed; of course much will depend upon the weather in such cases. The most important consideration whether the trees are large or small, is to keep the roots from becoming dry. If the roots once get dry, that is the end of the tree, as no after care will save it. Experienced dealers knowing this, take special pains to so pack their trees, that unless detained on the way by some accident, they usually reach the buyer in good condition. Careless buyers can in an hour or two kill the trees past all remedy. If the bundle or box is opened and the roots of a part are left exposed to the sun and wind while others are being set out, the last planted trees will die, and the seller be blamed. When the trees are received, whether large or small, have a puddle ready, mixing water with loamy soil to make mud as thick as cream, and as fast as the trees are taken out of the package, put their roots in this, work them around—with the hands if need be—until every root is covered, then put them in a shady place with the roots well covered with soil, and they will keep without injury for several days. The Norway Spruce, on account of its adaptability to a great variety of situations, its rapid growth, and its density, is more frequently used for screens than any other. If a single row is used, the trees should stand 6 feet apart; if a double row, they may be 10 feet apart, with the second row 10 feet distant, its trees opposite the intervals of the first row. For a more immediate shelter, some set a row of white willow or cotton wood between the spruces, putting cuttings after the spruces are well established, at 2 feet apart; the willows are thinned as the evergreens need the room. The White Pine may be treated in a similar manner. Our advertising columns give the addresses of several dealers in small evergreens. In mentioning the special dealers in tree seeds last month, the name of H. M. Thompson, St. Francis, Wis., was omitted; he deals largely in both seeds and seedlings.

Southern Cow Peas.

At the close of an article descriptive of Cow Peas, given last month, we stated that we expected an article upon their cultivation; this has come to hand, but we are quite unable to make room for it, and it must be deferred until another month. For those who wish to try the crop, we here give the essential points on planting, hoping to publish the entire article soon. The crop is grown with success in Virginia, and judging from the mass of herbage the plants produced in our trial referred to last month, we should judge them worthy of attention in more northern localities.

Even poor land will grow cow peas. On very poor land the peas are sown the end of April, the crop turned under to enrich the land, and a second sowing immediately made. The peas must not be sown until the soil is warm; the land is well plowed, and a bushel of seed for good land, and 5 or 6 pecks for poor, is sown broadcast, and harrowed in, or covered by a light plow; sown in June or July, the seed should be plowed in deep. The Red, Clay, Black, and Whippoorwill, are the kinds most esteemed for fodder, and they do better on poor soils. The Lady, White Table, and Crowder varieties require richer soils, and are the kinds cultivated for table use; they are often sown between rows of corn at the last working. Cow peas are often cultivated in orchards, serving to shade the ground around young trees, and at the same

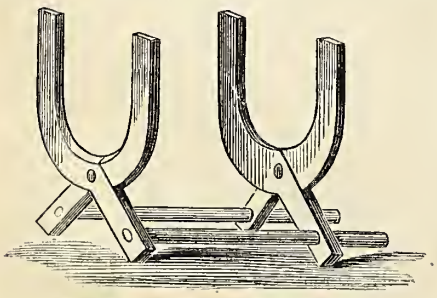


Fig. 1.—OLD FRENCH BUNCHER.

time furnishing a valuable crop of fodder. The after management and other matters will be found in the article when published.

Asparagus Bunches and Bunching.

In February last we figured and described the Asparagus Buncher invented by Mr. S. B. Conover, and in contrast with it the very primitive form still in use by many asparagus growers. The Revue Horticole in the same month gave engravings of four different bunchers in use in different parts of France; these we reproduce, not only because it is interesting to learn how gardening operations are done in other countries, but because these different devices may afford some useful hints to those who may desire to make something of the kind for their own use. We may remark here that asparagus is in France one of the leading vegetables, and while large areas are devoted to field culture, there are also immense establishments for forcing it under glass; these two sources are supplemented by

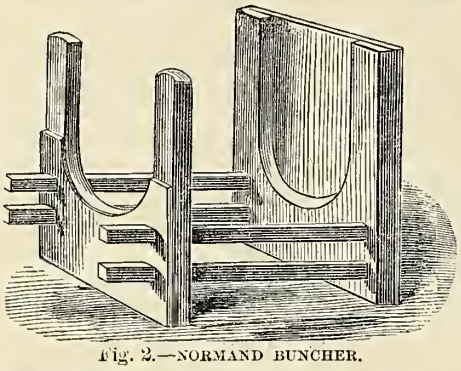


Fig. 2.—NORMAND BUNCHER.

that put up in cans, of which large quantities are preserved for home use and for export. From one or another of these those who can afford it can enjoy asparagus all the year round. The number of these bunchers at home and abroad show that the necessity for putting up asparagus in neat bunches is generally recognized; if any novice in asparagus culture doubts that careful preparation of this crop pays, let him send to market a lot of loose shoots, or even a lot of bunches carelessly put up, with uneven ends and butts, and he will be fully convinced that when he has raised the crop he has accomplished only one step towards turning it into money. In regard to the size of the bunches, that differs in this country with the season; the length is 8 or 9 inches, and the diameter through the center, from 4 inches early, to 5 inches later. In the French markets where articles are often purchased in small quantities, the large bunches are divided to make half and quarter bunches, and the

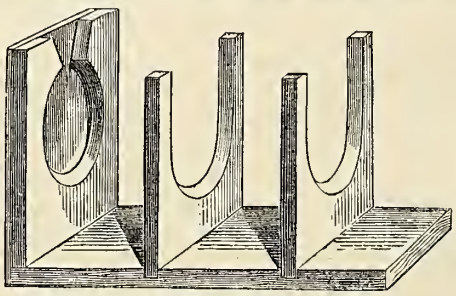


Fig. 3.—SARTROUVILLE BUNCHER—EMPTY.

marketmen have bunchers for doing this. Figure 1 shows the oldest of the French bunchers; it will be seen to consist of two pairs of wooden scissors with curved blades, to each short arm of one of these is fixed a wooden rod, which passes through a hole in the corresponding arm of the other, allowing the two to be placed at the desired distance apart; the scissor-like ends may be opened or closed, and held at the proper point by a string tied across the rods. The apparatus in figure 2 is called the "Normand Buncher, and is in very common use. It consists of two boards each with a U-shaped opening; the rear one has a thin piece across it to even the ends of the shoots, and near the bottom four square rods, upon which the front piece slides; a part of the front piece has a thin board over it to add strength. In figures 3 and 4 are shown the "Sartrouville Buncher," both empty and filled; its construction is shown so clearly that explanation is not needed; none of the parts are movable, the peculiarity about this is the back board, so contrived as to bring the tip of the shoots

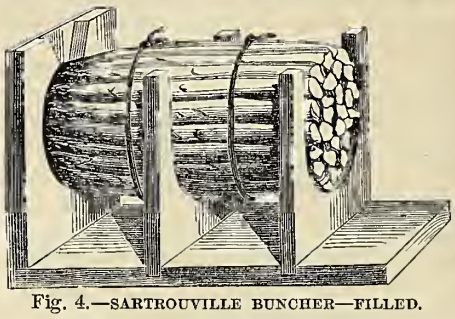


Fig. 4.—SARTROUVILLE BUNCHER—FILLED.

close together; when the frame is nearly full, the shoots are passed in through the wedge-shaped opening above. Figures 5 and 6 show closed and open a more complicated affair; it is the form sold by the implement dealers in France, and known as the "Argenteuil Buncher." The board *E* slides in grooves in the frame *D*, *D*, and carries the two pieces *B* and *C*; the end *A*, is like that in the preceding, arranged to draw down the bunch. The cross-piece *F* is merely for strength, and the circles near *E* indicate that underneath are cavities for the ends of the fingers, to facilitate the pulling out of the board. With all the conveniences that we have put before our readers, they should be able to fix upon one which will do the work neatly, and what is also important where there is a large crop, quickly. To have the asparagus appear in the market in the best possible manner, there are several precautions to be observed. It is customary for the cutter to lay the shoots in handfuls along

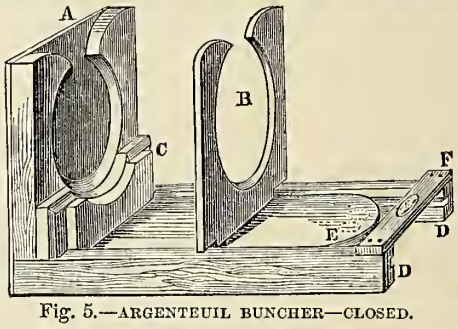


Fig. 5.—ARGENTEUIL BUNCHER—CLOSED.

the rows; these should not be allowed to remain long, as they will curl and wilt; in all handling keep the heads all one way. As soon as possible after cutting, wash, assort, and bunch; at least two sizes should be made, and the bunches should be of even quality all through. Take pains to have the heads very even, and cut the butts neatly and square. Tie the bunches very tight, or they will become loose in transportation. The fault with all the French bunchers is that they have no means of pressing the shoots, a difficulty overcome in Mr. Conover's buncher, which allows the bunch to be held under strong pressure until the ties are put on. Use flat ties; strong bass is generally used, and probably Cuba bass would be better than the native or Russia; figure 4 shows the usual method of tying in France, where willow twigs are employed. When made up, the bunches should always stand upright; if laid down they will become crooked. If obliged to keep the asparagus for a

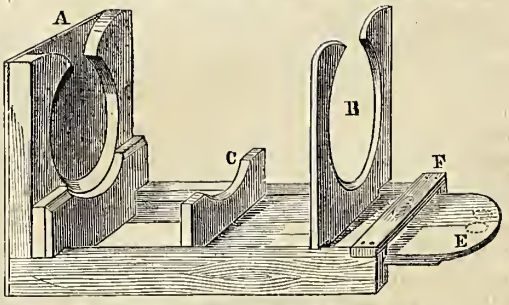


Fig. 6.—ARGENTEUIL BUNCHER—OPEN.

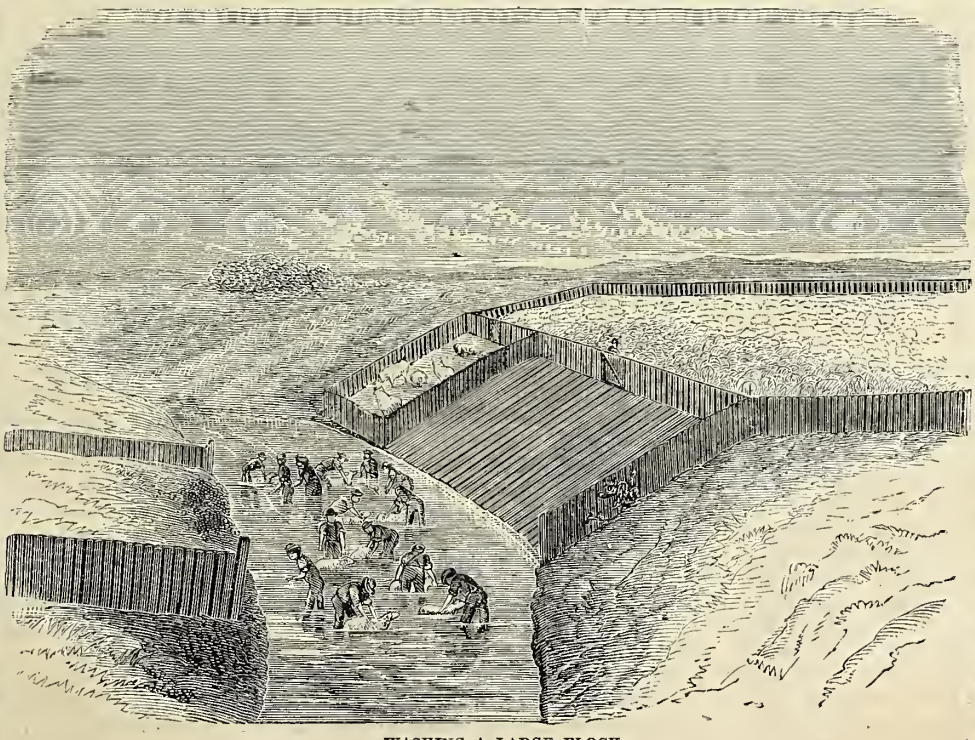
day or two before sending to market, stand the bunches in a tub, with an inch or so of water, and cover them from the light; keep in a cool cellar.

Sheep Washing.

It is a matter of some dispute amongst sheep owners whether it is better to wash the wool upon the sheep's back, or to shear the unwashed fleeces and sell them thus. Having tried both plans, we have concluded that the former is to be preferred as being the most profitable. Wool buyers generally deduct one-third for the loss by reason of waste in unwashed wool, and unless the fleeces are very oily and mixed with sand and filth, much more than should ever be permitted, this deduction is greater than the loss from washing, except with very yolky Merino sheep. This class of sheep may be profitably sheared without washing, so long as buyers do not object to 50 per cent or more of grease and yolk, and do not deduct more than one-third on account of it. The usual method of washing sheep, known as brook washing, shown in the upper engraving, is the most convenient for small flocks. For this a clean gravelly-bottomed portion of a stream is selected, where the banks are covered with a firm grassy sod, and a pen of rails or boards is made upon the bank, into which the sheep are gathered. The washing should be postponed until the weather is warm, and if it can be done the day following a warm steady rain, the fleeces will be washed more quickly and easily, because the dirt in them will be moist and softened. Ewes which are in-lamb should not be washed, lest their struggles, or the chill following the washing, should injure them. A period of ten days, at least, should elapse after the washing before the sheep are shorn, so that the wool may regain its softness through the renewed natural secretion of yolk and oil from the sheep's skin. For large flocks a different method, by which the sheep may be more quickly handled, must be adopted. The second illustration represents the manner of washing the large flocks common in Australia, and may be easily adopted in our western regions where many sheep are kept. A corral is made on the bank of a suitable stream, and a passage way runs from this to the water. This passage-way slopes rapidly from the bank to the water, so that the sheep, arrived at the passage, cannot avoid plunging into the stream. Here they are seized by the washers, and when their fleeces are cleansed, they go out of the stream on to the opposite bank. Fifteen or twenty washers will be able to thoroughly cleanse 3,000 sheep in one day, if the arrangements are roomy enough to accommodate them, and two shepherds will be able to arrange the sheep on the bank. One boy should be on hand to assist any sheep that may need help to regain its feet upon the bank, as it emerges with its fleece heavy and water soaked. The illustration shows the arrangement needed. An abruptly sloping bank upon one side, and a gently inclining one upon the other should be chosen. Such banks are everywhere found in the bends of streams, and if the water is deep enough to float the sheep, it is all the better. The sheep are collected in a large pen near the bank of the stream. In front of the large pen is a smaller one, which will hold a hundred sheep, and to which the sheep are admitted by a gate. When this pen is filled, a shepherd is stationed at a gate in the front of it, which opens on to a platform sloping to the water's edge. A small pen is made at the lower end of this platform, in which a few sheep are confined. These are used for the purpose of decoys, and the sheep in the second pen seeing these decoys, when the gate is opened, readily pass out on to the platform. Here they have no footing, and are obliged to run down into the water, where they are seized by the men awaiting them, and washed. The duty of the shepherd at the gate, is to permit so many sheep as can be taken care of, to pass out of the gate at one time, when he closes it until more are needed. If there are enough men in the stream to wash the sheep with sufficient rapidity, the shepherd may keep a constant stream of them passing down the platform, and when they reach the water they are passed from hand to hand across the stream, until the fleece is cleansed. When the sheep are nearly all out of the second pen, a fresh supply is admitted. By leaving a few in the pen, the sheep from the first pen do not hesitate to enter it, and there is less trouble in handling the sheep. For this reason it is thought best to have a number of moderate sized pens succeeding, and opening into each other, rather than to have a single large one which will hold all the sheep. To facilitate the labor of washing sheep, a water engine or force pump has been manufactured in Australia. This engine is much like one of our fire engines, but has a number of outlets instead of one, to each of which is attached a hose with a nozzle. The sheep are drenched by streams of water forced upon them through the nozzles; the wool is allowed to soak for a time, when a final drenching and washing is given to it. The sheep are confined, while being washed, in a pen with a sparred floor, through which the water is drained off.

WASHING A SMALL FLOCK.

After they are washed, the sheep should never be exposed to cold winds without shelter. If the weather be unfavorable, small flocks should be housed, or kept in a yard for a day or two, and large flocks should be driven to a portion of the pasture, where they may have the shelter of a bluff, or of a plantation of timber, as a protection against the wind. Catarrh and pneumonia are the diseases which usually follow undue exposure after washing, and from the peculiar nature of these animals, they rarely recover from the latter disease, which may very easily follow a neglected attack of the former. The best thing to be done is to prevent the trouble by leaving the washing and shearing until the weather becomes settled and warm, and by protecting the sheep, should an adverse change occur immediately afterwards. There is more danger to sheep with open fleeces, as those of the long-wooled breeds, than with Merinos or Southdowns. In the latter the close fleece prevents the rapid evaporation of the moisture in the wool, and it is the evaporation that is caused by winds that is dangerous. Slow drying by the warm sun is not injurious, it is from the cold dry winds that the greatest injury is to be feared, and when these occur after washing, shelter should always be provided in sheds or fenced yards.


WASHING A LARGE FLOCK.

Among the Farmers.—No. 4.

BY ONE OF THEM.

When I began to write out the thoughts that impress themselves upon my mind through constant contact with farmers, I little thought that I should be plowing a furrow in February 3,000 miles long, especially as I had so recently made a trip across the Atlantic and back. But the exigencies of trade know neither times nor seasons. "Seed-time and harvest, summer and winter, day and night," are all alike to one who "means business."—I hope to have my back-furrow well turned before this meets the eyes of the readers of the *American Agriculturist*, and mention now that this letter is written on the good steamer America, from New York to Southampton and Bremen, only because my letters have been of such a familiar character, that I think it may interest my readers to know the circumstances under which I write. They are not the most favorable for connected thought. Now the ink-stand takes a "scoot" across the table; now it is all one can do to keep himself in position; dishes clatter and smash in the pantries; spray flies on deck, and the ice hangs in festoons from taffrail and nettings. However, just now I am very comfortable, and can write perhaps as well as if I were ashore, and in my own snug study, about

Shallow Soil Farming.

Along the Atlantic coast strong soils are the exception, and thin or shallow soils decidedly preponderate. They are not bad soils if well tilled, but will hold manure like a bank, until it is checked out by the crops. To me, having been bred upon the stiffest kind of clays, that are hard to work, this thin soil farming was both novel and interesting. On clay soils the frost heaves down the stone-walls, tosses out the fence-posts, and often disarranges even fairly well laid foundations. The wheat "winter-kills" through the repeated freezing and thawing of spring; clover is apt to follow in the same way; cattle "poach" up the ground terribly in soft weather, and do great damage to grass, and there are many other little difficulties and circumstances which make harder and extra work on heavy soil, which light land farmers are free from, while those with which they have to contend are altogether of a different class.

Rapid Disappearance of Fertility.

In almost all thin soils, manurial substances, both of organic and of inorganic character, are soon lost. Organic manures, as well as vegetable mold, which accumulates under proper culture, if subjected to the least neglect, like other unhusbanded riches, literally "take to themselves wings and fly away." I know an excellent farmer in southern New Jersey, who is in the habit of getting very remunerative crops of corn from ground so light and sandy that it will hardly hold a sod at all. One year he put on a heavy dressing of fish compost, and planted corn, giving it an extra manuring in the hill. The heat of the application to the hills destroyed a part, and crows and blackbirds made such havoc with the rest, that he decided that it was not worth cultivating, and that, as it was too late to re-plant to advantage, he would let it go and sow rye. He expected a fine crop, especially of straw, which is nearly as valuable as the grain in the vicinity of the Philadelphia market. The rye was sown in good season, and although everything seemed favorable, he had short straw and no heavier grain than if he had taken unmanured land, or to say the least, had followed a corn crop with rye. Almost everything of value had been *burned out* and volatilized. It is seldom that this occurs in so marked a manner, but I have repeatedly witnessed similar effects; so that I have learned, if land which is manured must lie awhile, to sow oats, turnips, or some similar crop, and to plow this in when I need to use the land. All is not saved in this way, but much is. The land is *shaded* and the fertility in part absorbed by the growing plants. This leads me to say a word about

"The Fertility of Shade."

Some years ago an agricultural publication, which was regarded as given to the advocacy of quackish notions to a considerable extent, had a good deal to say about "the fertility of shade"—much that was said was false in theory, and absurd as a guide to practice, but there were facts stated, or rather there were statements made that seemed to be the record of facts, which the shade doctrine did not satisfactorily account for, as it was then presented. Now, however, it is clear to my mind *not* that there is any fertilizing influence in shade, but that there is a *de*-fertilizing effect in too ardent sunshine on thin sandy or gravelly land. So that I am bound to hold that the way to retain fertility in light land, is always, so far as possible, to keep a crop upon it. Keep it shaded in summer and

Keep it Bound in Winter.

The shade of a crop, together with the demands made by the same upon the soil, both husband and make use of the fertilizing properties during the growing season. When this is past, theoretically we should plow and sow winter grain as soon as possible. The action desired being to retain the fertility present, by converting it into living tissues, and also to prevent the active agency of the sun's rays from causing destructive fermentation and evaporation. Then too, as winter comes on with winds and rain, the former blowing away the finest and best particles of the unprotected surface soil, and often moving it in considerable quantities; the latter drenching the land, washing soluble manures into the subsoil or substratum of gravel, or after the ground freezes, washing away the best part of the surface, our rye crop binds the soil in place, and covers it as a blanket. It is at once windbreak, absorbent, shelter, and a defence against washing.

I see I am running from an assumption of theory into an assertion of practical truth. It is well enough, perhaps, for theory and fact ought to go hand in hand. If I have not watched in vain

My Practical Neighbors,

it is evident, that without a thought of theory they practice well, and upon this very principle. I never knew them to plow in a green crop in the spring, nor to plow in any green crop except weeds, or an old sward; nevertheless they leave their land just as little as possible without a crop upon it. While I have erred by letting my potato ground go fallow the rest of the year after the crop was dug, putting in oats in the spring, they have done better by having a rye crop on the ground as soon as possible after the potatoes were off. While I have tried by top-dressing to bring up mowing-land that was past its prime, with the wisdom of experience they put in the plow, and with no more manure than I use, fill the soil with vegetable mold, get a good corn crop, and start their rotation afresh. The salvation of poor, light land is a

Plenty of Vegetable Mold.

How to obtain it is an important problem, yet few realize its value. I pass daily across or by a field of one of my nearest neighbors. It is on the crown of a hill, the soil is sandy and light to that extent that after lying idle two years, five acres would not pasture a sheep. The rock comes to the surface near the top of the hill, and over a considerable space the soil is as shallow as it is light. In the spring it is fairly blue with wild onions, in spots, and even those do not do well, but make up in numbers what they lack in thrift, as is their wont. Last year he raised corn on that ground, and a very good piece it was. This is the way he did it. There is quite an extensive fresh-water marsh near by, and the grass is cut regularly for bedding. There is a little objection to its use as bedding in that we occasionally bring weed seeds with it upon otherwise clean land. On such land as I have described that difficulty is of small moment, for upon it snapdragon and onions are about the only weeds that will grow, and these were there to start with. The marsh-hay was carted directly upon the land and spread evenly. It was plowed under by pulling into the furrow before the plow as much as the plow, run barely 6 inches deep, would cover. The field was marked off and the corn planted in good season. That on the very shallowest soil received a little yard manure in the hill. My impression is, the corn was plowed but once. It may have been "cultivated" (*i. e.*, cultivatored) once and plowed once. The hoeing that it received was, as one may say, "a man went through it with a hoe." It really needed little more; there were no weeds, and all that was especially necessary was to straighten up that which either the horses, the plow, or the earth, had knocked down.—As I said, the crop, both of grain and of fodder, was a very fair one. It certainly was cheaply raised. In the mere carting of manure there was a great saving. I certainly would have taken the marsh-hay to the barn-yard, and carted it out again, and a few years ago would have thought that the success of the crop depended upon thorough tillage, while I now know that the less these sands are stirred, the better.

Fresh-Water Marsh-Hay

is regarded of little value for fodder, unless indeed it be cut very green, and then it is light and worth little to feed by itself, though useful to mix with richer foods. If it stand until late in the season, it becomes tough and hard to cut, but full of ash constituents. It is slow in decomposing, and even when used as bedding, saturated with the liquids of the stable and the barn-yard, it acts slowly, and may be depended upon to remain in the soil more or less intact well into the second summer.

Salt Hay

has similar characteristics, except that cattle eat it better on account of the salt. If cut early enough, young stock will winter upon it with a small quantity of corn stalks. Its principal use is as bedding and to spread in the barn-yard, where it adds greatly both to the bulk and value of the manure. I know of no better form in which vegetable matter can be added to the soil. There are no weed seeds in it, which, if brought upon the land, will do any harm. It is peculiarly rich in ash, and on whatever soil it comes, it makes its mark. Where farmers can get salt hay, or even fresh-water marsh-hay, I notice they generally neglect

Swamp Muck.

The peaty soil and partly decomposed vegetable substances, which accumulate in swamps where true peat does not form, usually pass under this name, the very indefiniteness of which is an advantage. The difference in the manurial value of the various sorts of this material is so great that, after paying considerable attention to the subject, I am unable to suggest any method by which the value may be approximately estimated without actual trial. Of this, however, I am convinced, that, while the deposits of some few swamps applied in a natural state, have done harm rather than good on some soils, no kind is harmful or other than very beneficial upon light land, if it be composted, or passed through the barn-yard. I have never known other than good results when it has been hauled out and spread during the autumn or winter. When thus treated, it may be harrowed and brushed or rolled into grass land in the spring, or plowed under with the sward. Away from the vicinity of salt-marshes it is more used, especially as its ameliorating effects upon stiff soils are hardly less than upon others. That greater use is not made of it is remarkable.

The Use of Lime on Light Land.

This is seldom recommended, yet on our gravelly loams, which, in fact, are much more sandy than loamy, I find it beneficial, and my neighbors are so earnest in advocating it, that I intend to try it more extensively than ever. With them it is usually spread in the winter upon grass land that has been mowed two or three seasons. On such land there is always a good portion of dead root fibers and dead grass, particularly in spring, upon which the lime may act.

It seems necessary that lime should have vegetable matter of some kind to act upon, especially in light soils, otherwise it only burns out the soil, and though crops may be somewhat benefited the first year, it is of no permanent good. Whereas if it has an old sward to work upon, it at once invigorates it, and greatly increases the strength of the sod, which is observable for two or three years. My plan is to apply lime in the winter to grass, and after seeing its effect, to cut one, and perhaps two crops of hay, that is two years' crops, and then to

break up the piece. If my anticipations are well founded, this will enable me to keep land in grass fully two years longer than I am now able to. The form in which lime is usually applied in our vicinity is that of gas-house refuse. Oyster-shell lime is, however, a good deal used. Gas-lime is, as is well known, a mixture of, to us farmers, unknown and indescribable things. We know enough, however, to handle it with care as well as with shovels, and if we cannot spread it thin in winter and break down the lumps tolerably fine, to let it lie in heaps until the next year. Sixty bushels to the acre is a good dressing if evenly applied, and half the quantity of oyster-shell lime answers about the same purpose. It is not at all worth while to put on too heavy dressings, lest the burning effect be observed. Lime must have vegetable matter to act upon in such soils as ours, and the quantities of each must bear some reasonable relation to one another.

Vegetable Mold Prevents Leaching.

Almost all thin soils are peculiarly subject to "leaching," that is to having their goodness washed *through* them. The remedy is to make a soil full of fine mold. To this end the land must have a crop upon it all the time. A growing crop fills the soil with roots. The roots decompose and form mold. Red clover is pre-eminent as a mold-making and soil-making plant. Buckwheat is useful chiefly when it is plowed under. Corn sowed as for fodder, being scattered in every third furrow when plowing, may be plowed under, or it may be cut and fed or cured; in either case it is beneficial. The roots and stubs make a great mass of mold in the soil, and where it is all made use of as a green manuring, the result is most satisfactory. Turnips cover the land quickly, and if plowed under are of marked benefit. In any event they prevent the growth of weeds, and as summer-fallowing is always detrimental to such land, quick-growing green manure crops are our only resource, for by their use we work the soil, we kill the weeds, and improve the land, all at the same time and with little labor.

Country Roads.

The past winter has greatly enlarged the experience of farmers, especially those in some of the western states as to the value of a good road. In many places farmers have been practically imprisoned. The barns and granaries have been full, but the farmers' pockets have been empty, the freight cars are idle, and business stagnant because of the impossibility of moving a load of grain upon the

Fig. 1.—DIFFERENT GRADES.

roads. Without roads a man is reduced almost to the condition of an uncivilized savage and is helpless. Yet it is not for want of money expended that the roads are thus useless. Many country roads have cost more in repairs the last ten years than would have built a good solid track passable at all seasons. Much of the fault lies in the poor material used, but more in the bad form and wrong direction given to them. Our whole road system is faulty from the foundation. The rectangular division of the western country has influenced or forced the roads to take straight courses without

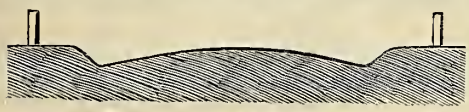


Fig. 2.—ROUNDED ROAD-BED.

respect to the character of the ground, and in other places the want of scientific engineering has led to the construction of roads without regard to keeping a proper level, and to maintain a direct course, they have been taken over hills instead of around them, in forgetfulness of the fact that in many cases the measured distance over a hill is as great as that around its base upon an exact level. The time has now arrived when farmers cannot afford in the close competition with other industries to disregard the necessity of cheap roads, and a road that costs nothing, but cannot be used, is dearer than one that may cost $10,000 a mile, but permits two horses to draw 100 bushels of wheat to market upon any day in the year. In considering the question of roads

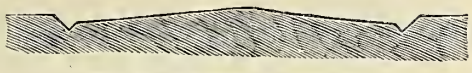


Fig. 3.—IMPROVED ROAD-BED.

there are five principal points involved: these are the direction, the slope, the cross-section, the material, and the surface. Unfortunately in most cases we have made our road bed, and cannot help ourselves, but there are circumstances in which it would be cheaper to abandon the present roads and make new ones, than to repair the old ones. It is here that the help of scientific engineers should be sought, and the management of roads taken from incompetent and incapable men, and put into those of educated engineers. Here is the first and most necessary reform. As to the direction, it is not always as regards roads that a straight line is the nearest distance between two points. In a hilly or rolling country, it may be actually shorter to go around a hill than to go over it, leaving out of view the saving in cost of hauling loads up the inclination to be referred to, hence it is important to give such a direction to the road as shall keep it as near-

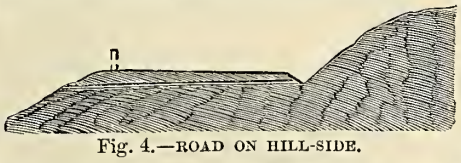


Fig. 4.—ROAD ON HILL-SIDE.

ly level as possible. A road 10 miles long, which is so curved that in no one place more than a quarter of a mile can be seen at once, will be only 150 yards longer than a perfectly straight one, and yet in such a road a hill might be avoided that would reduce the usefulness of the road one half, or double the cost of transportation over it, by destroying half the power of the horse to draw loads upon it. As to slope, it has been shown by repeated actual tests, that if a horse can draw 2,000 lbs. on a level road, he can only draw 1,800 on a rise of 1 foot in 100; 1,620 on one of 1 in 50; 1,440 on one of 1 in 40; 1,000 on a rise of 1 in 25; 800 on one of 1 in 20, and 500 lbs. on a slope of 1 in 10. Thus, if a road rises 1 foot in 25—considered a very easy hill, and a very frequent slope—one half the power of the horse is wasted; and when the slope is 1 foot in 10—a not unusual slope in hilly countries—three-quarters of the horse's usefulness is lost. Let it be remembered that as when a chain has one weak link, its whole strength is only equal to that of the weak link, so a road which has but one hill of 1 foot rise in 25, is reduced in value one-half, or in other words renders it necessary to carry half loads, or employ double horse power over the whole of it, if that hill has to be passed over. Of course the length of the hill has something to do with this, for a horse may "spurt" for a short distance so as to double his force, but this can only be done on a very smooth road, and for less than 500 feet, without the risk of disabling or permanently injuring the animal. Few people are used to estimate slopes, and it will be useful to study the diagram, fig. 1, which gives the various slopes 1 in 10, *a*; 1 in 15, *b*; 1 in 25, *c*; 1 in 40, *d*. Upon the cross section of a road depends its durability and drainage. If it is too rounding, loaded wagons will tend to slide or work to the edges, and wear the surface rapidly, or the rain, flowing off too rapidly, will wash the surface into the side ditches. A rounded form, fig. 2, is bad, because when wagons are crowded from the ridge to the sides, where the slope is greater, the road is worn away by the sliding of the wheels, and as every driver keeps the center when he can, the road is worn there the most, ruts are there formed, water is held in the ruts, and the road is speedily in bad condition. A good cross section is shown at figure 3. In this the road slopes from the center equally upon each side, and one foot in 24 is abundant slope for a well made road; this is equal to 1 foot rise in 48 feet wide, or 6 inches in one 24 feet wide. When the road slopes in length, the side slope should be increased, so as to force the water towards the side ditches, and prevent its running down the road. When the hill is steep, and the road is upon the hill side, the form of the cross section should be as that shown at figure 4. Here there is but one slope, towards the hill, and but one ditch. This prevents washing, and all danger of sliding off the road in frosty weather when the surface may be icy. The water is taken from the ditch by culverts under the road, as shown by the dotted lines. This will do away with the absurd and worse than useless water-bars common to our unscientific roads. The ditch should be dammed so as to turn the current into the culverts, and these should be so frequent as to avoid risk from

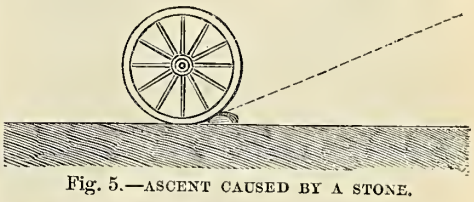


Fig. 5.—ASCENT CAUSED BY A STONE.

overflow. The material is perhaps the most important consideration of all. It is in this that the western roads almost wholly fail, and fail where there is every other element needed for the best of roads. Broken stone, crushed by machinery, and assorted by screens, is the best material; trap or greenstone are the toughest and best rocks; limestone comes next, and sandstone last of all. The manner of crushing and screening the stone was shown in the *American Agriculturist*, page 260, 1874. The breaker there represented is the Blake Stone Crusher. This excellent machine is well adapted to work a revolution in the character of our roads by cheaply providing the best of material from either quarried rock, or the boulders or "hard heads" from the fields. If it were in ordinary use, our country roads would be doubled in value at a saving of half the yearly cost of making repairs. Next in value to broken stone is coarse gravel. This material may be procured in many places where stone is not at hand, by sinking pits or excavating hill sides. By rolling this material firmly, a good solid bed may be made. When earth is the only material to be procured, much care in making and draining the road must be exercised, and at the best a poor road will result, though the bed may be improved by the addition of a heavy coat of sand. In no case should sods or the surface vegetable soil be used for a road-bed, and this should be removed down to the subsoil as the first preliminary operation towards making a road. Neither should large stones be mixed with the material, or they will certainly work to the surface to its great injury. The surface should be maintained in good condition, or the road will fail with great rapidity. A level road may be made as bad as a hilly one by leaving the surface uneven, or covered with loose stone. A

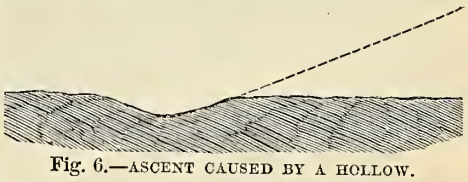
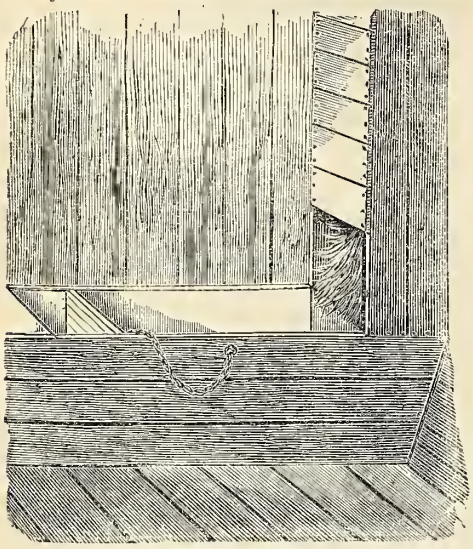


Fig. 6.—ASCENT CAUSED BY A HOLLOW.

hollow in a road, or a loose stone over which a wagon wheel is forced to mount, may change the level surface into an inclination of one in ten, or even one in five. This is seen in figures 5 and 6, in which the dotted lines show the amount of rise over which the load has to be lifted. This is rarely thought of, or is unknown to those who are in charge of country roads, but costs the farmers thousands of dollars yearly in the aggregate, which, if it came in the shape of a tax, would be vigorously resisted. Unfortunately we have space enough only to hint at the chief points of this subject, and to make a few general suggestions. Those who would pursue the subject in detail, may do so profitably by reading "A Manual of Road Making, by Dr. W. M. Gillespie," which costs $2.50, and in which the whole subject is treated of at length.

A Hay Spout for Horse Stables.

Hay racks, which are elevated above the horse's



SPOUT FOR HAY.

head, are both injurious and wasteful. Even the best hay is not free from dust, and some of this is so acrid, and irritating to the bronchial tubes and lungs, when inhaled, as to cause the disease known as heaves; the dust falls from such racks directly into the horse's nostrils, and the animal cannot help inhaling it. In such a rack the hay is breathed upon, and is picked over, much being then rejected and wasted, and left to fall upon the floor of the stall. To avoid these troubles the hay may be passed down from the floor above by a spout, which is made slightly larger at the bottom than at the top, so that nothing can lodge in it. This is shown in the annexed engraving. The spout comes down at one corner of the stall to the manger, where there is a small opening at which the hay is exposed, and from which the horse can draw a mouthful at a time. Until some is withdrawn no more hay will come down, and as the horse cannot pick and choose there is no waste. At the other end of the manger is the usual box for grain or cut feed. Where there is more than one stall, the spout may serve for two. It should then be placed between the stalls, with an opening on each side for each horse.

Convenient Butter Packages—Molds.

The tendency of the fancy butter business is evidently towards such packages, and such a form of product as shall enable the retailer to deal it out to his customers in a neater and more presentable shape for the table, than has been possible hitherto. Quality is of course the first desideratum, but appearance, with the majority of consumers, will have more weight than quality in deciding a purchase. Frequently, those dairymen who make a choice article of butter, by reason of their instinctive neatness and better taste, send their product to market in very handsome and attractive form. What the market wants is good butter, in such a shape that it can be cut up neatly into small pieces for the table. We have heretofore made many suggestions to this end, and have described and illustrated many methods of putting up butter in attractive shapes. We here illustrate another method, which will be found useful and convenient, not only for the dairyman and consumer, but also for the retailer, upon whom the difficult task of properly handling the butter falls most severely, when he is called to cut it up into pounds and half pounds for his customers. The mold here illustrated consists of a box made with loose ends, and with sides which fall apart when required; this is intended to make well-formed cakes, of four or five pounds in weight, which may be divided into pounds or half pounds without weighing. Figure 1 shows the bottom and sides hinged together, and figure 2 the mold with one end fitted on. The ends are made to slip over the sides into a groove, as shown in the engraving. A pound of butter is weighed and packed into the end of the mold by means of the stamps, one of which presses the side, and the other the top, the latter having the impression of the packer's initials or trade-mark. Then another pound is weighed and packed in the same manner, and so on until the mold is filled. In the packing, grooves are left in the butter, marking the divisions between the pounds, by which the retailer may cut it up into pieces of exact weight; each of the pieces having been weighed previously to the packing. These grooves may be made by small, loose pieces of wood placed in the mold during the packing, and by a permanent mark lengthwise of the mold. When the whole is packed, the mold is taken apart, and a cake of butter is left shaped as in figure 3. These may be set away to cool and harden, and afterwards wrapped in muslin cloths dipped in clear cold brine, and packed in a refrigerating box to be shipped to market. The box should be so

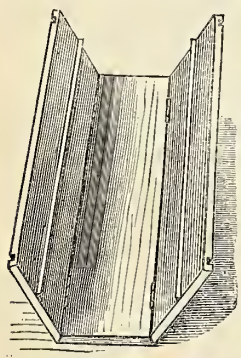


Fig. 1.—THE SIDES OF THE MOLD.

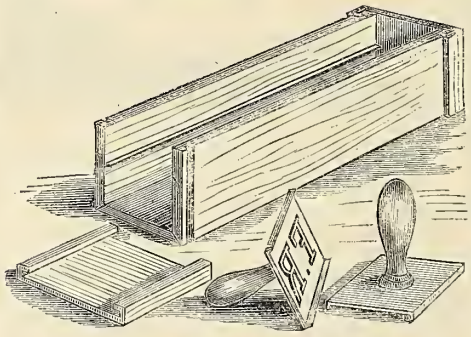


Fig. 2.—THE MOLD WITH END AND STAMPS.

arranged that the front may fall down when it is opened, and the shelves upon which the butter is packed be drawn out one by one; each layer of cakes being placed upon a separate shelf. To keep the butter cool, ice chambers are to be made at each end of the box, and filled with a freezing mixture of pounded ice and salt, which will help to maintain a low temperature for a considerable time. Not more than 60 pounds should be packed in one box, or it will be too heavy for convenience and safety in handling it in transportation.

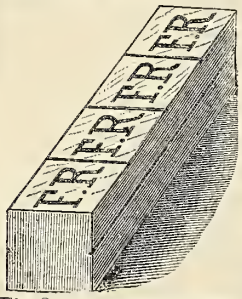


Fig. 3.—CAKE OF BUTTER.

Hints and Helps for Farmers.

BY L. D. SNOOK, YATES CO., N. Y.,

The Construction of Culverts and Sluices, &c.

In the northern states June is the most convenient month for the making and repairing of roads, as farm work is less pressing than at other times in the summer. But there are some preliminary operations that demand earlier attention—the most important of which is to keep the water from leaving the side gutters and running upon, washing, and cutting up the roadway. A little attention to this

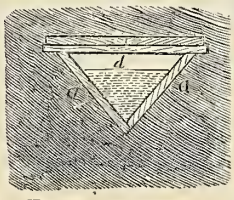


Fig. 1.—CULVERT.

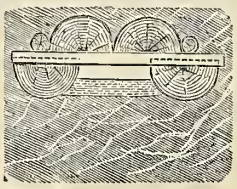


Fig. 3.—LOG CULVERT.

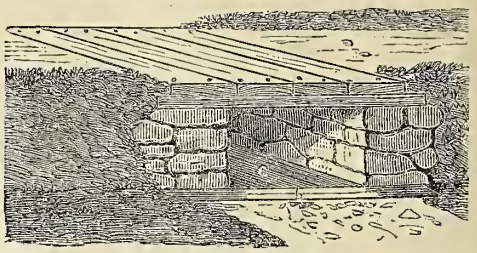


Fig. 2.—FOUNDATION OF BRIDGE.

matter in spring will frequently save many hours' labor at the annual repairing. Should the freshets loosen or misplace a plank, or otherwise render a

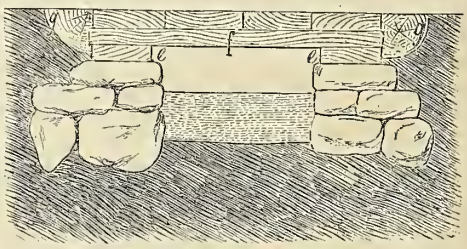


Fig. 4.—LARGE CULVERT.

bridge dangerous, it should be repaired at once.

Along hill-sides, and at other points where small bridges are constructed, a rapid current of water soon washes away the soil about the foundation, making frequent repairing necessary, while if the work had been properly done at the first, it would not require attention for many years. For a small stream, that will flow through a tube 7 or 8 inches square, a conductor, as shown in figure 1, may be constructed. The planks *a*, *a*, are 2 in. thick, a foot or more wide, and 14 feet long, firmly nailed together at the lower edge, and connected at the upper edges by several strips of plank, *d*, of 2 feet or more in length. A V-shaped trench is then dug across the roadway, in which is placed the 3-sided box; earth is firmly pressed under the sides, when plank are laid on, and the whole covered with earth as shown. This wooden conductor may incline at the rate of 1 foot in 6 if need be; owing to the smoothness of the water course it will not fill up and choke with sand, neither will the foundation be washed away. It will be found useful for cheap small bridges along sluggish streams. To prevent the walls of large bridges from injury by the washing away of the foundation, planking may be used as shown in figure 2. The planks, *c*, should be firmly fitted between the walls of the culvert, and project at each end about 1 foot beyond them. At the upper end, a plank, *b*, rests upon the end of the bottom planks, and is pinned to the ground, or

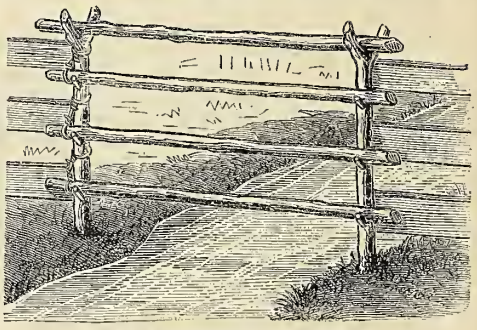


Fig. 5.—SIMPLE FLOOD-GATE.

heavy stones placed upon each end to keep it in position. Flagging, or paving the water courses of bridges with stone is economical, especially for rapidly running streams.

In figure 3 is shown the manner of constructing a small culvert from split logs and poles. Figure 4 illustrates the construction of the upper part of a large culvert; *e*, *e*, are planks laid upon the foundation walls; *f*, are connecting planks placed about 2 feet apart; *g*, *g*, are quartered pieces of a log about 1 foot in diameter, which project below both the surface plank, and connecting plank, *f*, holding them firmly in position; it also serves as a

bumper for the wheels to strike instead of hitting the plank, as is usually the case.

Flood Gates.

At the point where fences span streams or tem-

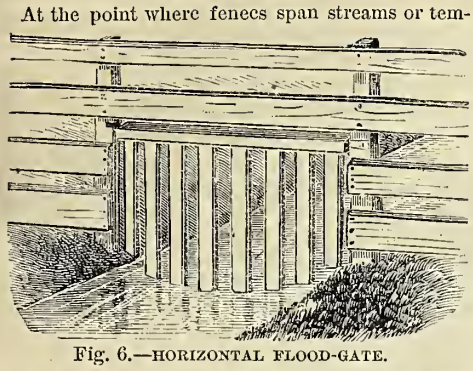


Fig. 6.—HORIZONTAL FLOOD-GATE.

porary water courses; it is desirable to have some form of flood gate The simplest form is shown in figure 5, and is most valuable for streams 15 or more feet in width. A crotched stick or post is set at each edge of the stream. Into the sides of these are driven spikes or wooden pins, at an angle of about 40°, upon which rest one end of the rails, the other end of each rail being secured by rope or chain to the post; when the stream rises, and the rails are lifted from the pins, one end floats down the stream, the other being secured to the post, giving a clear passage for float-wood, ice, etc.

A very simple form of self adjusting or horizontal flood gate, is shown in figure 6; this is intended more especially for small streams, spanned by board fences. Both ends of a scantling are rounded and fit into holes bored into posts; a slot made in one post will admit of ready removal; arms or floats are nailed or mortised into the top piece. It may be allowed to swing both ways, or only in the direction of the current.

The gate in figure 7 combines all the good points

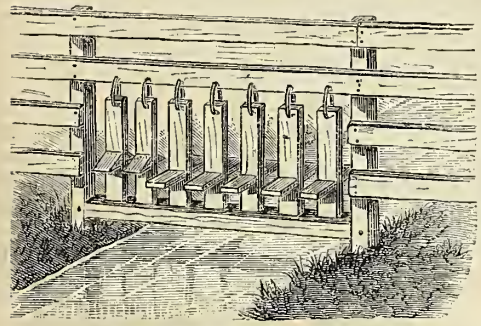


Fig. 7.—SECTIONAL FLOOD-GATE.

of the preceding, and has none of their defects; it is also simple and durable. Very near the bed of the stream a connecting piece is firmly mortised or pinned to the posts; in the upper side of this piece, holes are mortised from four to six inches long, one inch deep, one inch wide, and four inches apart, into these mortises, very loose fitting, short strips of boards are placed in an upright position, reaching within three inches of the fence board, to which each are separately fixed by wire loops. If it be desired that the passage shall be clear when the water reaches one foot in hight, floats made of three-cornered pieces of scantling, or short pieces of board, may be fastened to the suspended pieces,

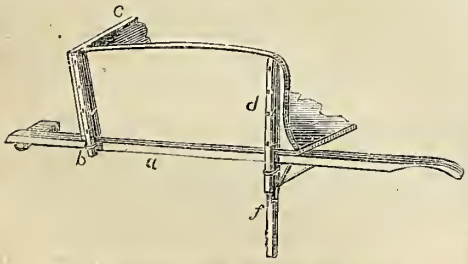


Fig. 8.—STRUCTURE OF WHEELBARROW.

by which they are lifted out of the mortises. When the water falls, the strips may be replaced.

How to make a Wheelbarrow.

For many purposes nothing can fill the place of the wheelbarrow, and yet few farmers own one, because of the cost, which is from $3 for the rough unpainted railroad barrow, up to $10 for those well ironed and highly finished. Farmers and others may make a substantial wheelbarrow that will be quite as neat and good as one costing $5, at an outlay not exceeding $1.50. The side or handle piece,

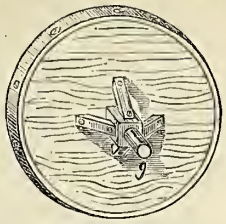


Fig. 9.—WHEEL.

fig. 8, *a*, is made from well seasoned hardwood, 2×3½ in. square, and 4 ft. 10 in. long. One foot from the end, at *b*, a mortise is made ¾×2 inches. Into this is inserted a standard, to which is nailed the end-board, *c*, 14 in. high, and inclining backwards about 2 inches. At 2 ft. 6 in. from this mortise, another of the same size is made for the leg, which is 15 in. in length, and is braced as shown. The bottom-board is from 20 to 24 in. wide at its widest part, and 14 to 18 in. at its narrowest part,

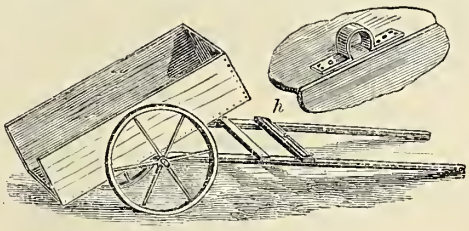


Fig. 10.—SELF-DUMPING CART.

according to the size desired, and should be firmly attached to the frame. The loose side-boards are 14 in. wide, and about 2 ft. 9 in. long; to these are nailed hardwood cleats, one-half in. thick, and 2 in. wide, the one at *d* being 22, and the one at *e* 17 in. long. Both these should fit into staples or iron bands attached to the leg *f*, and frame *a*. At the upper end, near *e*, a hook is attached to the side-board, that hooks into a staple attached to end-piece. This will be found a more convenient and simpler method of firmly securing the side-boards, than by the old plan of long bolts, etc. In absence of a spoked wheel, a solid one may be made of some hard or tough wood, and should be 2 in. thick, and from 14 to 18 in. in diameter. For the axle a well seasoned hardwood piece, 2 in. square, and of the length desired, may be used; two inches of each end is reduced to one inch in diameter, as at *g*, figure 9. Upon each side, connecting the shaft to the side of wheel, braces are used and fastened with screws; use a light iron band for the tire. Such a wheelbarrow will carry 200 lbs. with ease, and last a life-time if kept painted and carefully used.

Self-Dumping One-Horse Cart.

In figure 10 is given the form of a home-made, self-dumping one-horse cart. For wheels those with three-inch tire are preferable, as they cut up the fields less than narrower ones. The axle should be of well-seasoned oak, maple, or hickory timber, of a sufficient thickness to round up six inches in diameter. In this are mortised two 2×2½ inch holes for the thills, into which are bolted or pinned the large ends of the thills. A strong box is made, about 4 ft. wide, from 6 to 8 ft. long, and 1 ft. high; one end is made fast, the other, as it is commonly called, the tail-board, is removable, and may be hinged at the top at each end, and allowed to swing out at the bottom by unhooking it. Upon the under side of the box, midway between the ends, and near each side, is bolted or fastened with screws, the clasp, shown in figure 10. These irons should be strong, such as two inch wagon tire. The axle passes through these clasps, and

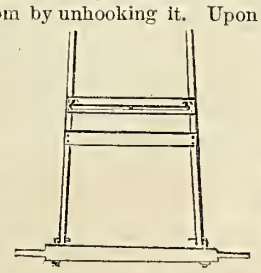


Fig. 11.—SHAFTS.

they form the tilting hinges of the cart. The box is retained in a level position by a hook or catch upon the end of the box which engages with the cross piece, *h*. An equally simple management for tilting is shown in figure 11. The thills are connected with the axle by two common iron hinges, The box is then firmly bolted to the axle, one side of which should be flattened for the purpose, and is connected with the cross bar, *h*, as in the plan first described.

Combined Halter and Bridle.

Figure 12 shows a cheap and desirable manner of converting a common halter into a bridle, which will be found equally useful with a more costly one to guide a team with safety about the farm, or on the road. Either straight or jointed bits may be attached by each side to a common harness snap, *R*, which is inserted into the side ring, *A*, of the halter. When the bit is not used, one side is loosened from the snap, and the loosened end

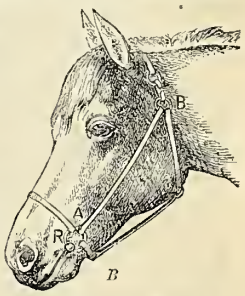


Fig. 12.—HALTER AND BRIDLE.

snapped into the ring, *B*, which places it entirely out of the way, allowing the horse to eat, drink, or sleep, with freedom. A common leather or webbing halter, without the ring at *B*, can be used. The form is quite immaterial, if it only has the side ring, *A*. Small straps about 7 in. long can be substituted for snaps and need not be strong, as their office is to prevent the bits from falling out of the mouth. A couple of halters made in this way for field use, will be found far more convenient than the usual plan of changing halters for bridles and bridles for halters several times a day.

The Transportation of Cattle by Sea.

The importation of horses and cattle for breeding

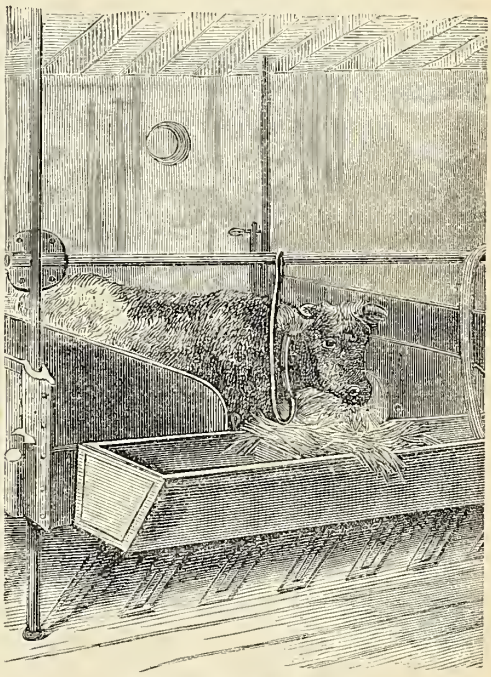


Fig. 1.—VIEW OF STALLS.

purposes, as it is now conducted, is necessarily somewhat risky, and the animals, even under the most favorable circumstances, often suffer greatly during the voyage. This business has now reached considerable proportions, and some means for securing the comfort and safety of the valuable animals brought hither, is very desirable. An effort to secure this has been made in the construction of stalls for use on ship-board, so arranged that in the roughest weather the animals may not be injured by being thrown violently about. The construction is shown in figure 1; the ground plan is given in figure 2; the section or front in figure 3; the inside divisions in figure 4; and the outside of the pen at figure 5.

The reference letters are the same for all the engravings. It will be seen that there are four stalls

in one complete pen, which is formed with fixed or movable iron stanchions (*A*) at the corners; those at the head of the pen have movable clamps (*B*), with sockets, which carry a plank, (*D*), to which the feed-trough, (*E*), divided into compartments, is fitted. In each compartment is a trap for removing surplus feed. Water troughs are also fitted in-

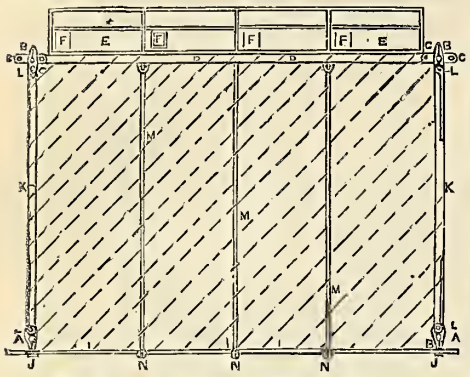


Fig. 2.—GROUND PLAN OF THE STALLS.

to the feed troughs. An iron bar (*C*) is fitted above the trough, to which the cattle are haltered; the bar is raised sufficiently high to permit the animal to protrude its head and feed. Along the rear of the stalls is carried a strong rubber band (*I*) 14 inches wide, and firmly secured by clipping levers (*J*), which are fastened to the stanchions. The bands are tightened by means of a roller and ratchet, and furnish an elastic cushion against

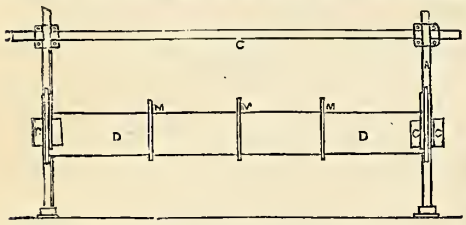


Fig. 3.—SECTION OF THE STALL.

which the cattle are easily received when the vessel rolls violently. At each side of the pen is a movable plank (*K*), fixed to the stanchions (*A*, *A*), as shown in figure 5. There are also dividing planks (*M*, figure 4), separating the stalls from each other; these are made of ash or other flexible timber. These planks are fastened to the rubber band by a metal piece, and a rod (*N*), which has a thread at

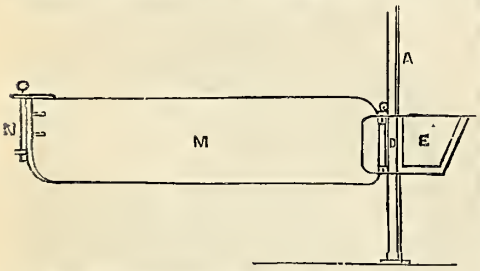


Fig. 4.—PARTITION BETWEEN THE STALLS.

the lower end, and is turned by means of the eye at the upper end, and screwed into a hole which receives it, thus tightly grasping the flexible band. The floor is battened diagonally, and a strip of rubber is fastened upon each batten, so that the ani-

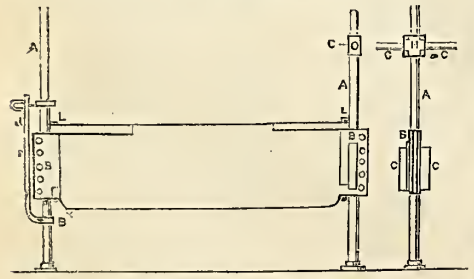


Fig. 5.—SIDE OF THE STALL.

mal not only has a more secure footing, but if thrown down by the violent pitching of the vessel, falls upon the rubber strips, and is not bruised. For moving the animals into or out of their stalls, a box is provided, which runs upon wheels; the animal being placed in this, is hoisted or lowered, as the case may be, and conveyed without handling to the pen; there is a door in the box through which, when it is opened, the cattle can enter their pens. This arrangement is described in the Veterinary Journal, and will at once commend itself to the notice of those who make a business of importing valuable live stock.

Packing Eggs in a Barrel.

A great number of eggs are lost every year through imperfect packing. In fact, faulty, or in many cases dishonest packing are not confined to eggs alone, but seriously reduces the value of much of the produce sent to market. Those who have good articles to send for sale, and fail to pack them well, may lose one-half their value on this account alone. The salable value of a package of produce is measured by that of the poorest part of it; the good always has its value diminished by the bad; but the bad article which may be with it is never raised in value by the good. If by poor packing any part is damaged, the whole is depreciated together; this is true to a greater extent with eggs than with almost anything else, because a badly packed barrel of eggs is a miserable thing to look at, and worse still, to handle, especially when the weather is warm and a *very* few old nest eggs have been packed with the good ones, which does sometimes happen in spite of care, though not when only glass nest eggs, which never spoil, are used. Sometime ago, in looking over the American Grocer, which often has hints about marketing produce of various kinds, we saw directions for packing eggs very similar to what we have already given several times, but as they were accompanied by a useful illustration, we here reproduce it. The engraving represents what should be the appearance of the inside of a well packed barrel of eggs. The barrel should be a good one, clean, strong, and well hooped. At the bottom is placed 3 inches in depth of clean, dry, sweet rye or wheat straw cut in a fodder cutter into chaff not over half an inch in length. Upon this the first layer of eggs is placed on their sides, near together, but not touching. Some of the cut chaff is then scattered over the eggs, so that it falls between them and fills the spaces. Then one inch in depth of chaff is laid upon them, and another layer of eggs placed upon it. The number of eggs in each layer is shown by the figures at the side of the barrel—an ordinary sized flour barrel. The barrel will hold 70 dozen. It is not well to crowd more than this into a barrel. The chaff and eggs are placed in alternate layers in this way until the barrel is one-third full, when a piece of board is laid upon the chaff and pressed down carefully to make the mass solid. This is done again when the barrel is two-thirds full, and it is then shaken gently to settle the contents. When the last layer is packed, it is covered with three inches of chaff, which should project an inch or more above the chine of the barrel. When the head is pressed down steadily and slowly into its place with some shaking of the barrel, the eggs will be held so firmly that no shaking they may receive in the course of their journey will loosen them, and a severe jar will not break any of them. When they arrive at their destination they will be in good order, and bring the highest price, having cost no more to pack, except a little extra trouble, than the poorest barrel that may come to market. Musty or damp straw, or poor grain, will give a scent and flavor to the eggs which will injure them, notwithstanding it is generally supposed that an egg shell is impervious to such influence. Cut wheat or oat straw is the best packing, wheat, rye, or oat chaff is the next; good sound oats is a good but expensive packing; hay is very poor material, and buckwheat bran the worst, as it so readily heats. When the barrel is packed the number of eggs in it should be plainly marked upon the head.

EGGS PACKED IN BARREL.

RYSDYK'S HAMBLETONIAN.—One of the most noted, and perhaps the most useful horse of the present century, has recently ended his career. This is the stallion so long and well know as Rysdyk's Hambletonian. He was the sire of more than 1,500 valuable horses, many of which have been used in the stud, and thus helped to extend the beneficial influence of the blood of their sire. He was foaled in 1849, near Chester, Orange Co., N. Y., and when five weeks old was purchased by Mr. W. M. Rysdyk, with his dam, for $125. Since then he has not changed owners, excepting to become the property of Mrs. Rysdyk, who owned him at the time of his death. He was thus 27 years old, and has been used as a sire for 25 years. His direct earnings have been about $450,000, but the value in money that he has added to the stock of the country, cannot be estimated at less than several millions, besides perpetuating an influence for good, the value of which cannot be estimated. He was closely in-bred, and thus becomes a powerful example for those who favor close breeding. The skin of the dead horse is to be stuffed and presented to the Central Park Museum.

A Japanese Timber Splice.

The artizans of China and Japan have long been known as adepts in the art of constructing mechanical puzzles. Something like one of the intricate Chinese puzzles, which are so difficult to put together, is the building erected on the Centennial Exhibition Grounds, at Philadelphia, by the Japanese Government. This building is of wood, and is framed together in such a way that there is not a nail or a screw about it. The joints are mortises and tenons, or dovetails, which fit together with the greatest accuracy and firmness. As a specimen of the ingenuity and beauty of the framing, and as an example of mechanical art, which may be turned to our own benefit, we give engrav-

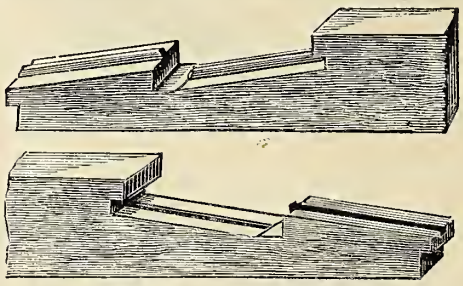


Fig. 1.—PARTS OF SPLICE.

ings showing the manner in which the sills of this building are spliced. Figure 1 shows the upper and lower part of the splice. It is seen that the ends of the splice are a sort of mortise and tenon, which are brought together by means of wedges driven into a space at the center of the splice, and are afterwards held in their places by a neatly fitted key. (See fig. 2.) There is a tongue and groove running along each half of the timber,

Fig. 2.—THE SPLICE TOGETHER.

the whole length of the splice, except at the space left for the key-seat, which prevents side movement. A beam or sill, thus spliced and keyed, can not be separated without removing the key, and if the splice is accurately laid out and worked, the joint goes together with a sliding fit, with the great-

est ease. The framing and construction of this building, will be a very interesting study for those mechanics who may visit the Exhibition.

Decrease of Population in our Farming Counties.—Farmers' Prospects.

The State Census in New York shows that there has been a decrease of population in ten of its agricultural counties in the last five years, amounting to 6,177. All the counties having a large city, except Jefferson, show a decided increase, which reveals the fact that the tendency of our population is more and more toward cities. All the increase of the state in the last five years, which amounts to 322,000, has been in cities and villages. This tendency has been marked in New England for the last fifty years, and is destined to go on in the future. Nothing can be more certain than that in the older states the consumers of agricultural products are rapidly increasing, while the farming population is decreasing, or barely holds its own. It follows from this that farm products must increase in value. The demand for them grows faster than the supply. Within fifty years the price of many of these products has doubled, and some of them quadrupled. Veal and mutton were thought to be well sold at 4 and 5 cents a pound, cheese at 6 cents, eggs at 10, butter at 12½, poultry at 10, and beef and pork at 5 or 6 cents. Animal products are, without doubt, destined to advance in price still further. If prices go up as consumers multiply, farming must pay better in the future than it has in the past. The young men, who, during our centennial year, will make up their minds as to their business in life, should take these facts into consideration. There is to be a harder struggle for bread and the comforts of life, in the large cities, where consumers are so rapidly multiplying. Labor will not be so well rewarded there. All farm products will be in greater demand, and will bear higher prices, while the cost of production will not be materially increased. The comforts of life have greatly improved in our farming districts, and in most of them in the older states, the style of living is much above that of laboring people in cities. To those who stick by the farm, and cultivate the paternal acres, the future promises an abundant reward.

The Produce Commission Business—Fruit Dealers.

BY C. W. IDELL.

[The produce commission business, especially that devoted to fruits, is one about which we have many inquiries. There is probably no business in which the relations of the parties concerned—the consignors and consignees—are less understood. There are abundant sources of dissatisfaction on both sides; the producer may think he has put up his fruit in the best manner, but it arrives at the market in a damaged condition, and the returns are small; a neighbor may have received on Tuesday, profitable returns, while one who ships his fruit on Wednesday, and it arrives when there is a "glut" in the market, finds that his fruit has sold at half the price of the other, and at once suspects fraud on the part of the dealer. These troubles occur when everything is fairly conducted, and are inseparable from the nature of the business. The following general view of the trade, setting forth some peculiarities connected with it, concerns every fruit-grower, as raising the fruit is of little avail unless it is properly sold. It has been written at our request by Mr. C. W. Idell, No. 227 Washington St., N. Y., who is one of our oldest fruit commission dealers, and from whom we may expect other articles relating to the business. ED].

In every large city there are to be found commission merchants whose character for responsibility and promptness is so well known that it is never questioned by those who consign to them. When another dealer makes application to fruit growers for consignments, the idea does not enter their minds to make inquiry into the character and responsibility of the new applicants; their dealings with the one they have heretofore trusted have been so satisfactory, that, thinking all others equally honest, they ship to the new men simply because they have been solicited to do so.

Perhaps no line of business, in large cities, is so filled up with persons who have neither the experience or means to do what they promise, as the fruit commission business.

The reasons for this state of affairs are very obvious. One is, that many suppose that little or no capital is needed to carry on a commission business. As to this point, it is safe to say that fifty per cent of the commission dealers are the sons of farmers, who, without any mercantile experience, conceive the idea of becoming commission merchants; they count upon the well-known character of their parents, who can and do influence their neighbors to aid them by sending them consignments of fruits. When these persons begin, they fully intend to keep all the promises they make, and do so as far as they are able; but being entirely unused to the business, they are not aware of the risk they must run, or the expenses that must be met before they can turn these consignments into cash and pay the consignors. Moreover, they are not aware that there is a class of buyers who are constantly on the watch for beginners who do not know them; these buyers purchase freely, where a new comer will trust them, but they are very sure to defraud him out of the payment. It is a custom among the commission dealers to sell to good parties, and collect the bills at the close of the week. These dishonest buyers also claim this short credit, and if they succeed in obtaining it, often ruin young firms who trust them. Many instances have occurred where young commission dealers were daily defrauded out of a large portion of their sales, nor did they realize it until they came to settle with their consignors, when they discovered they were short of funds with which to square accounts. No doubt these merchants were honest in their intentions, but they did not know how to control the business intrusted to their care, yet their creditors suffered the loss of their money just as much as if there had been intentional fraud; not having a sufficient amount of capital to meet the demands of their creditors, they have been compelled to bear themselves branded as dishonest.

It is probable that the majority of those who fail, do so from the want of a moderate amount of capital with which to sustain themselves until they could acquire the necessary experience to succeed. Unfortunately there are some who carry on a thorough, systematically, fraudulent business, but these men do not fail so readily, for they are a shrewd set, and can make more money by continuing than by failing; should they fail, that would end their opportunities for defrauding, but by continuing in business, and employing numerous agents, or drummers, they succeed in getting a large run of trade, and make money.

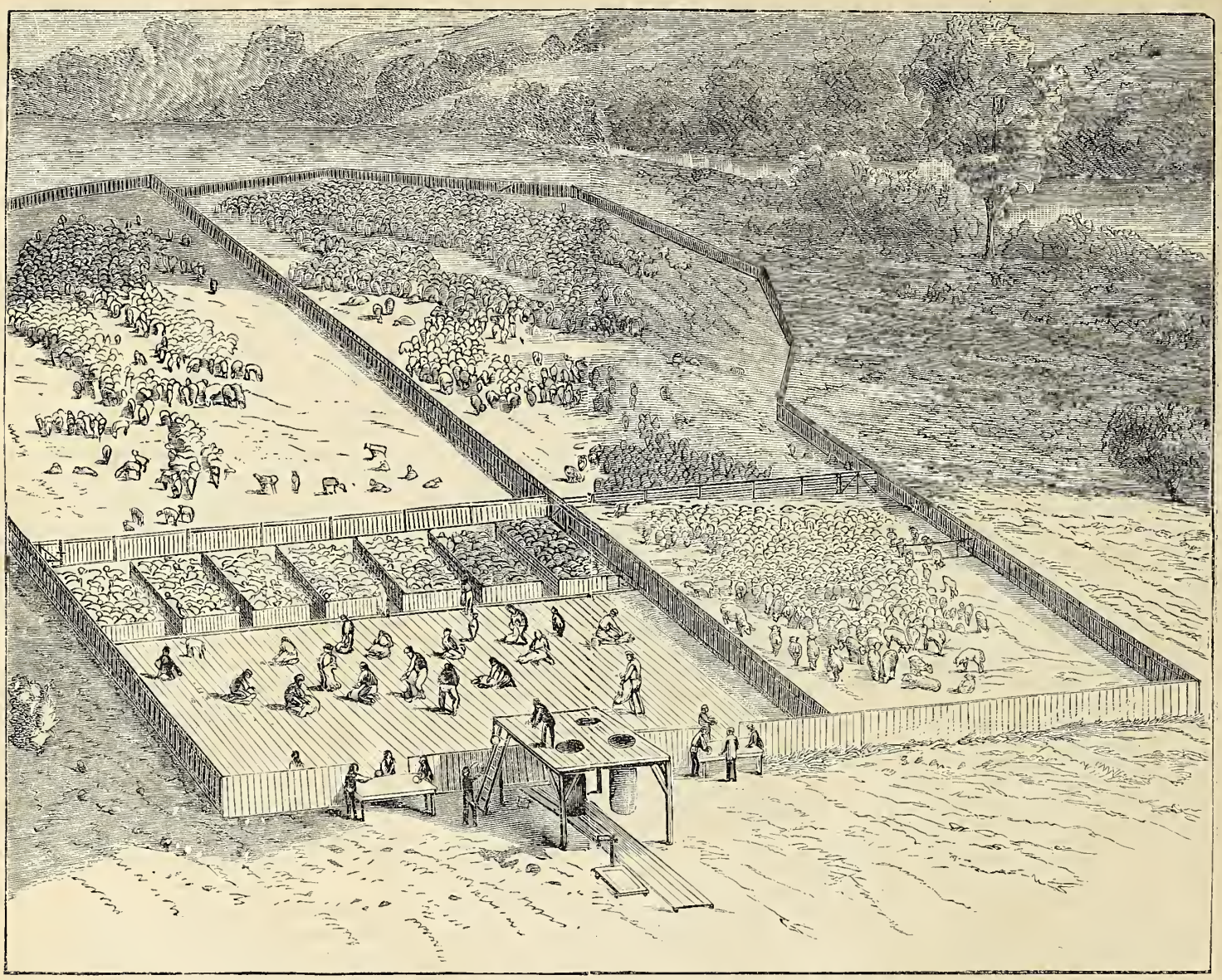
It is a singular fact, that farmers and other growers will often ship their crops to dealers of whom they know nothing, nor do they take the trouble to inquire in regard to them. Yet were these same persons to ask for a loan of $25, they would not lend it until they had made the strict inquiry as to the applicant's responsibility. If growers would make proper inquiry as to the dealer before they shipped their fruit, there would not be so much money lost by them as at present. They would find that many of the so-called commission merchants had no fixed location, but were running about the country, misrepresenting themselves, in order to obtain consignments. It is surprising to what extent these men really succeed in procuring consignments from growers who make no inquiry in regard to them. Such is the effect of personal application by a persuasive man, that in some instances, growers who were cautioned about shipping to these persons, have refused to believe them dishonest, and were convinced only when they were cheated out of their consignments. When this happens they are quite ready to assail, not only the men who defrauded them, but to set down all in the commission business as frauds.

There is one thing in regard to these irresponsible dealers that growers do not think of, that is, that *they* are themselves responsible for their existence. This may seem improbable, but it must be remembered that these men are wholly dependent upon the distant grower for supplies, as the city dealers, knowing their characters, will not trust them for a single dollar. Did farmers also refuse to trust them, they would be driven out of the business. Let growers observe one simple rule and they will be safe from all loss by fraud. If you do not know a dealer, do not ship to him until you ascertain that he is responsible. If a man is trustworthy, you can soon find it out, and there is no necessity to run a risk simply because solicited to do so. If he wants your crops, let him furnish you with his references. The old adage that "an ounce of prevention is better than a pound of cure," is a very good one in this case; while the prevention is an easy one, the cure is very difficult, and it is a poor offset to the loss of your money to turn and denounce him, when you are aware that you alone are to blame for trusting a person of whom you know nothing. It may be well to suggest to young men desirous of becoming commission merchants, that they first hire with some good house until they have learned the business, and feel capable of carrying it on themselves, or, if they have capital, they may arrange to become a junior partner in some established firm.

GROWING RAPE SEED IN WISCONSIN.—A correspondent from Wisconsin, states that he raised last season, 4½ acres of rape seed, which yielded 30 bushels of seed, worth $1.65 a bushel. He sowed in the middle of June, at the rate of 4 quarts of seed per acre, and cut the crop before it was quite ripe, with a self-raking reaper. It lay upon the field until dry, was then hauled in a wagon rack over a tight box, and covered with cloths, to save the seed which shelled easily. The seed was thrashed upon a bare barn floor, by treading with horses....The yield would probably have been bettered by using double the quantity of seed, and by manuring. Rape is a crop that needs a rich soil.

TRANSPLANTING EVERGREENS.—Each spring there come numerous inquiries about transplanting evergreens, and many think success depends upon choosing exactly the proper time. In our experience we have not found the *when* so important as the *how*, having removed the trees in the fall, and early and late in the spring. If one can have his choice of times, no doubt that the period when the swelling of the buds shows that vegetation is active would be preferable, but we have succeeded with much earlier and much later planting. The one great and all essential point is to keep the roots from becoming dry. If these are dry, send the tree to the brush-heap, as that will be its ultimate destination. If the trees are to be brought from no great distance, a dull day can be waited for, otherwise the roots must be packed in wet moss, be puddled, or some protection given them; they had better be kept soaking wet than to dry at all. Some ask what manure to use. Probably guano would kill them the quickest, but fresh stable manure will be pretty sure.—*Never* manure an evergreen at planting. When well established, well decomposed manure will be of use. The top affords such an obstacle to the wind that all trees over two or three feet high should be staked.

BAREFOOT OR SHOD.—The relation between the well clad feet and valuable labor of one man, and the bare feet and carelessness or indolence of another, is something worth considering. A careful, tidy, neatly dressed workman, is generally careful of the animals he tends, and neat and quick about his work, while a slovenly dressed man is too apt to be careless or idle, or smoke in the barn when the employer is absent. In Vienna, at the Exposition of 1873, 12 to 20 cents more a day, was regularly given to workmen who wore leather shoes, than to those who wore heavy wooden clogs or went barefoot. Every person who has employed many laborers, can readily understand the reason for this.



A CALIFORNIA SHEEP RANCHE—SHEARING TIME.

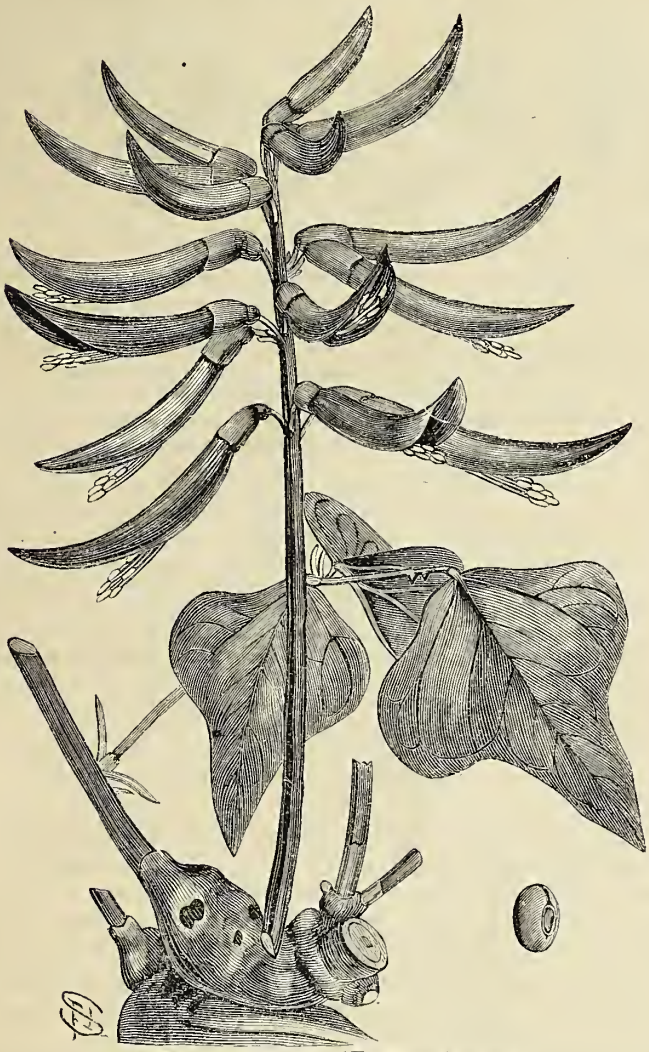
Sheep-Shearing in California.

The method of shearing the large flocks which are kept in parts of California is worthy of the special attention of those who own many sheep in other parts of the country, and is not without interest to those who raise even a few sheep. In California the wool is clipped from the sheep twice every year, and usually in May and September. This is done for two reasons: the health of the sheep is improved by it, and the fall clip is worth more than the spring clip, it being freer from burs, which reduce the value of the whole fleece. The lambs are also shorn in the fall. The clipping time is a busy one and occupies a month on the larger ranches, such as the Tejon ranche, where many thousand sheep are kept. The arrangements upon this estate for shearing are similar to those of other large establishments, and the description here given will be understood by reference to the engraving, in which the whole operation in its several details is illustrated. The shearers at Tejon (pronounced *Tehone*) are Indians and Mexicans, who are very expert, and can clip on the average 90 head per day each. The sheep are gathered near the shearing pens and floor, and 3,000 or 4,000 of them are penned in the enclosure shown at the upper right-hand pen in the engraving; from this they are driven, about 700 or 800 at a time, into the smaller pen in front of it. From this smaller pen the sheep pass through a gate-way into the passage, and the smaller pens connected with it to the left, and in front of this row of smaller pens, is the shearing floor. The shearers take the sheep, one at a time, from these small pens, and after removing the fleeces, turn them loose, when they go back to the pens again. This is continued until all the sheep in the pens are shorn, when the gate at the further end of the passage on the left is opened, and the shorn sheep allowed to escape into the large pen at the left of the rear. As each fleece is shorn, the shearer brings it to one of the tables in front, where it is taken and examined by one of the foremen, who hands to the shearer in exchange a tin check stamped with the owner's name. At the close of the day these checks are redeemed at the rate agreed upon, which is generally about six cents for each fleece. The foreman hands the fleece to a man at one of the wool tables on either hand, who ties it up with twine into a compact bundle. As soon as the fleeces are tied up, they are tossed to the men on the platform, who pack them away in the wool sacks. These are suspended in the platform through a round trap-hole by means of an iron ring a little larger than the hole, and to which the open end of the sack is sewn. When the sack is full it is dropped on to a gangway below, where it is closed up and wheeled out upon a truck to the platform scales, weighed, and marked with the weight, and the name of the owner. The bales are then ready for shipment to market. The whole cost of shearing in this manner is about 10 cents per fleece.

Our Native Coral-Plant.

The Brazilian Coral-Plant is not rare in conservatories, and is often planted out in gardens, where its large clusters of crimson flowers make a brilliant show. This is *Erythrina Crista-galli*, and is generally sold by florists under that name or as the Coral Plant. It is easily managed, by keeping its big chump of a stem in a dry cellar in winter, and setting it out in the spring, as one would a dahlia root. There are several other Erythrinas (the name being from the Greek word for red), one of which is found in this country from North Carolina southward. Probably every one recollects his first meeting with a striking plant, and though we have seen this many times since, its acquaintance was first made under peculiar surroundings. Twenty-five years ago this month the writer was going down through the state of Sonora, Mexico, in charge of a government train; we traveled along very smoothly until we came to what is known as Gaudaloupe Pass, where one could look down on a sea of mountain tops, and down which our wagons had to go. The descent was about 1,000 feet, and for

a good part of it the mules were taken out and the wagons let down by hand. Perhaps wagons have been taken down more difficult defiles, for it can hardly be called a road, but we have never seen it done. While all this hard work was going on, our eye caught sight of a large patch of the most brilliant scarlet at one side of our path, and part way down the ravine, and there was never anything more tantalizing; here below were plants we did not know, and above, were mules and their Mexican drivers, and wagons, that we knew only too well. At length the last wagon had been lowered, and the tempting plants could be visited without neglect of duty. Here was a sight than which we have rarely seen one more brilliant. A patch several feet across of what we knew to be a coral plant, but could hardly think it the same as that of the Atlantic and Gulf states, so far inland. Still it proved to be the same as that, which is *Erythrina herbacea*. It has a large thick root or underground stem; the stems, 2 to 4 feet high, and two sorts, one bearing leaves only, and the others only flowers, or with a very few leaves. The leaves are compound, having three divisions or leaflets, which are somewhat triangular egg-shaped, and sometimes lobed at the base; the stems and leaf-stalks are prickly. The flowering stems bear a raceme one or two feet long, of narrow flowers which are about two inches long. The structure of the flower shows that the plant belongs to the pea family, but here the conspicuous petal or standard, which in the pea stands erect, is horizontal and folds over the other parts of the flower, and is of a deep and showy scarlet. The several seeded pod is much constricted between the seeds, which are about the size of the common bean, and of a bright scarlet. These brilliant seeds are often picked up by travelers in Florida and other southern States, and they are frequently sent to us for a name. This coral plant will probably prove hardy far north of its native localities, as the stems die down in the fall, and the root is protected under ground. Plants in our garden near New York, survived the severe winter of 1874 and 1875, and we trust that they may come out all right this spring. Should it prove, as now appears likely, hardy, it will be a valued addition to our borders.



NATIVE CORAL-PLANT.—(*Erythrina herbacea.*)

THE GIBRALTAR PERENNIAL CANDYTUFT.

Perennial Candytufts—The Gibraltar.

The common annual Candytuft is a very pretty and useful plant; it comes into bloom very soon from the seed, and by sowing for succession, its clusters of white flowers, of a very convenient form and size for bouquets, may be had all through the season, and those who have a greenhouse can keep up a supply nearly all the year. Annual candytufts are very common in gardens; the perennial ones are not so; yet the perennial species are much finer. But let us first say that these plants, both annuals and perennials, belong to the genus *Iberis*, the first cultivated species having been introduced into England nearly 300 years ago from Iberia, the country we now call Spain; those who look carefully at the flowers will see that they are much like those of the peppergrass, radish and mustard, and that the plant belongs to the *Cruciferæ*, or Mustard Family; the name Candytuft was given because one of those first cultivated was brought from the isle of Candia, or Crete, and, having its flowers in tufts, it was called Candia-tuft, which very easily became Candytuft. We said that the perennials were finer, because they have more substance to the usually pure white flowers. The perennial, or Evergreen Candytuft is kept by most florists; it is a low, shrubby plant, perfectly hardy, with narrow, evergreen leaves, and covers itself in May with a sheet of the whitest bloom. A small plant set out in the border will soon spread and make a large clump, which may be multiplied by division or by cuttings. Those who can not readily get the plants should sow seeds. Here our advice will not be followed; amateur gardeners can not think of such a thing as sowing seeds and then wait a whole year for the plants to bloom. They must have results *right off*, and can hardly wait for the seeds to germinate, so impatient are they. But a twelve-month! That is not to be thought of. The consequence is they deprive themselves of many of the most charming garden plants, and content themselves with annuals and bedding plants, neither of which last beyond the current season. Still we hope, by setting forth again and again the excellence of perennials, to induce some to make a trial of them, and the Evergreen Candytuft is a good one to begin with. Gardeners take up the plants in the fall, pot them, and after they have had a rest, force them in a greenhouse for a supply of winter flowers. While this is an excellent plant, it is not the best of the perennial candytufts. The finest of all is the Gibraltar Candytuft (*Iberis Gibraltarica*), which seems as

yet to be scarce. We do not often call attention to plants which cannot be readily obtained, unless, as in this case, we wish to stir up the dealers, as we have found that florists and seedsmen are very sure to get a plant which their customers call for. The engraving gives a flowering stem of the natural size; the leaves are broader than in the other; the individual flowers are much larger than in any other, while the cluster is very compact, and does not become ragged as the seed-pods begin to form; the flowers are white, and often, especially when they have been in bloom for some days, become tinged with rose or lilac. The French writers say that it should be covered during the winter, but it has proved quite hardy with us even in the severe winter of 1874–5. It continues in flower longer than the other perennial species, of which there are two or three not here mentioned, as it throws up side-shoots which prolong the bloom.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE IV—HOUSTONIA AND PARTRIDGE-BERRY.

Among spring flowers many are more conspicuous, but few more welcome than the modest little *Houstonia cærulea*, with its tiny blue and white stars thickly sprinkled among the earliest green of all

FLOWERS OF THE HOUSTONIA.

Figs. 1 and 3, *Long stamens.*—Figs. 2 and 4, *Long styles.*—Figs. 3 and 4, *Enlarged and laid open.*

our moist pastures. They last, too, until summer is fairly begun. The French Canadians call them *Bluets*, but in the States they do not appear ever to have got any one well-recognized popular name, to which they have a clear title. "*Innocence*" is one which they may share with many a simple flower. "*Eyebright*" is not bad, but it belongs to a very different blossom, which is rare in this country. *Bluets* is an importation, but is coming into use, and is preferable to the others. But *Houstonia* itself makes as nice a common name as *Magnolia*. It commemorates Dr. Houston, an English surgeon and botanist, who studied under Boerhaave at Leyden, came to the colonies nearly 150 years ago, probably collected this little plant in Virginia, and died soon after in Jamaica. Blue Houstonia is not always a very good name, for the blue, while sometimes very distinct, is so delicate that under the garish sun it very commonly fades at once into white.

We long ago noticed something odd about these flowers. They are perfect, that is, have both stamens and pistils, but they look as if they were not. In one clump the eye of every flower shows the tip of four anthers; in another clump every one shows in the same place a pair of stigmas and no anthers. One would say these plants are male and female, but both have an ovary under the calyx, which sets a few seeds; and, on splitting open the tube of the corolla, we may find in each, hidden out of sight, the organ it seemed to lack. Figure 1 represents one of the flowers with high stamens; figure 3, the same, laid open and enlarged, shows the short style and its stigmas. Figure 2 represents a long-styled flower; figure 4, the same, laid open and enlarged, shows the four low stamens, at about the same hight as the stigmas of the other flower. We call this *dimorphism*, which is a convenient Greek-English way of saying that the blossoms, though perfect, are of two kinds.

But what is the meaning of it? At first we fancied that such flowers were on the way to becoming unisexual; that is, we thought it likely that one sort was going to lose its pistil, and the other sort its stamens. And, indeed, now since we know that "Nature abhors close fertilization," this supposition might not be very unlikely. But inspection proved that one sort was as fertile as the other.

For the real explanation we had to wait for Mr. Darwin, who, applying this principle (which he received from that prince of scientific horticulturists, Andrew Knight) to a similar case, that of the primroses, saw at once into the whole meaning of the thing. The gardeners had seen this arrangement for years and years, in the common English Primrose, and called one sort *pin-eyed*, and the other *thrum-eyed* blossoms; but Darwin first saw through it. Consider, that if our plants are to be of separate sexes, half of them can bear no seed; while, if we can make sure that hermaphrodite flowers shall reciprocally cross-fertilize, all may be fertile, and yet the whole advantage of separate sexes be secured. Now this dimorphism is just a contrivance for securing that. Figures 1 to 4 illustrate the structure in Houstonia. Before explaining the operation, let us look at another case of it in an equally pretty wild flower of a larger size, viz: in *Mitchella repens*, or Partridge-Berry, of which two branches are shown in figure 5. Besides the size and greater conspicuousness of the parts, the Partridge Berry, coming later into blossom, may be examined by our readers after the Houstonia has passed by, which may be the case in some parts of the country before this number comes to hand.

The Partridge-Berry grows in woods, preferring much shade, and is found all the way from Canada to Florida, in the former coming into bloom in

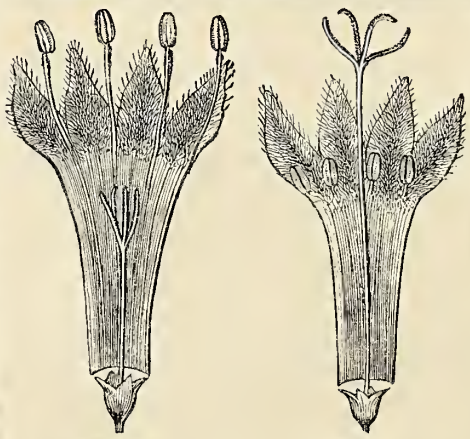


Fig. 6. Fig. 7.

Fig. 6. *Long stamen*, Fig. 7. *long style flower of Partridge-Berry enlarged and laid open.*

July, in the latter in April. Every youngster knows that a Partridge-Berry has two eyes, while a Wintergreen-Berry has only one. The explanation of this appears when we go back to the blossom; for here we see a pair of flowers for each berry, so that the berry actually consists of two grown into one. This is a peculiarity of the Partridge-Berry; but what we are now considering is the two kinds

Fig. 5.—BRANCHES OF PARTRIDGE-BERRY OF THE NATURAL SIZE.

of blossom, after the fashion of *Houstonia*. Our two plants in figure 5 would never be found in the same patch; for all that have come from the same seed are alike. The right-hand flowers have the four stamens on rather slender filaments, hung over the orifice of the corolla at considerable hight; the left-hand flowers have their four hairy stigmas—admirable pollen-catchers—raised on the slender style to the very same hight. Both have the counterpart organs lower down in the tube, within reach, though not in sight. To see them we have only to split down and spread open the corollas, as in figures 6 and 7, enlarged views, one of a long-stamened and short-styled, the other of a long-styled and short-stamened blossom. These little blossoms are most pleasantly sweet-scented, and therefore attractive to insects from a distance, and they are showy enough to attract the eye.

This is the structure; now for the operation. When any flying insect, feeding by a proboscis or long tongue, dips this to the bottom of a Partridge-Berry flower, it will be likely at the same time to smear its face with the pollen of the high-anther sort, and to wipe it off on the hairy stigmas of the long-styled sort, and so fertilize one by the other. But in the very act of thus fertilizing the high stigmas, its proboscis will be drawn back and forth through the cluster of its four anthers, huddled together in the mouth of the tube, and the pollen sticking to it will be conveyed in due course to the next blossom of the high-stamened and short-styled sort, and be wiped off upon the hairy stigmas of that flower as it is thrust in and withdrawn. And so as the insect roves from flower to flower, and clump to clump, it must regularly fertilize the low stigmas with pollen from the low stamens, and the high stigmas with the pollen of the high stamens. It is just the same in *Houstonia*, only the work is done by smaller insects. Here, then, is a beautiful illustration of "the economy of Nature." All the advantages of two sexes are fully secured, as fully as in the willow trees with which the bees are busy overhead, while smaller insects are attending to the Houstonias: but in the willows half the plants are sterile, or staminate only, and bear no seeds, while here every one is fertile. Dimorphism is an arrangement through which flowers, by alluring insects to serve them, double their fertility.

Gardening as a Business—How to Begin.

BY PETER HENDERSON.

In response to continued inquiries from those who wish to engage in gardening as a business, I propose to write out briefly, yet comprehensively, such advice and instruction as my long experience, together with my intercourse and correspondence with hundreds engaged in the various branches of gardening enable me to give. I find that the persons who desire to begin gardening as a business, are generally such as have had their tastes turned in that direction by being amateur cultivators. Their gratuitous distributions of slips, seeds, or roots, to sometimes not over-grateful recipients, starts the idea "that what is not worth paying for is not worth having," is as true of garden products as of other things, and that they had better sell

than give. As selling means business, the question then is, how to best begin the business to make it pay. My advice to all such inquirers is, to keep away from large cities, unless they have a large capital and a thorough practical knowledge of the business. The beginner with limited means and more limited knowledge of the business, would be quite unable to compete with those who have been long established, and such are to be found in nearly all cities of 100,000 inhabitants, or over. On the other hand, in cities of 5,000, 10,000, 15,000, or 20,000 inhabitants, the business may be begun, and profitably carried on with but little capital and a moderate amount of knowledge at starting. How to start is the all important question. In my works on commercial gardening—"Gardening for Profit," and "Practical Floriculture,"—I have separately, in the departments of market and flower gardening, given advice on the culture of vegetables and flowers as separate and distinct branches of business. Further experience has led me to believe that it would often be of great advantage to the beginner in small towns, to undertake the cultivation of small fruits, flowers, and vegetables combined. In a town of say 5,000 inhabitants, the profits from the sale of flowers alone, would hardly be enough to warrant a beginning, while an acre or two of well grown fruits or vegetables in addition, would make quite a respectable business. We will suppose then that a frugal man, able and willing to work hard, has a capital of $1,500 to $2,000; let him select not more than two acres, either on a lease of say 10 years, or by purchase, as near to the business part of the town as practicable. The soil should be of a quality that has borne *good crops* of hay, corn, potatoes, or other farm produce. Do not be induced to go far from the business center of the town, because land is cheap there; it is better to pay $100 *rent* per acre for, say two acres, a mile from the center of a town, than to *buy* land at that price three or four miles distant for such a purpose. It is a fact beyond all question, that whenever fine specimens of fruit, flowers, or vegetables are offered for sale, a demand is created that did not before exist, and would not then have existed unless these articles were placed before the eyes of the people. Presuming then that the one or two acres is secured, if a dwelling-house, stable, or other buildings are to be erected, let them be placed, if practicable, on the north-east corner, so that the part of the land to be cultivated, or where greenhouses are to be erected, be not shaded. If flowers are to be grown, of course a greenhouse is indispensable, and the proper construction of that is a matter of importance. Perhaps the most appropriate size for a beginner is one 20 feet wide by 50 feet in length, which may be heated either by smoke-flue or hot-water circulating in iron pipes. At present prices the house would cost, if heated by flue, about $10 per running foot; if by hot-water $15 per running foot. For details of construction, reference may be made to our work on the subject, as it would be useless to repeat them here even if space would admit. This greenhouse, having an area of 1,000 square feet, should produce a crop of flowers and plants, when once properly stocked, which should sell for at least $1,000 each year. The stock of plants to begin with, purchased from any wholesale florist would cost from $100 to $200, according to kinds. The annual cost of fuel, labor, etc., after it is in running order, should not exceed $300 per year. It will be seen that the profit on the investment is good, if the work is mainly done by the owner; but a glass structure of this size would not pay to hire a man to work it, though it would be large enough at first for the wants of an ordinary population of 5,000. But such a population will buy far larger amounts in fruits and vegetables, and will probably buy ten times the amount and give more for these if fresh and home grown, than for those that are packed and shipped from a distance. In fruits, strawberries hold the most prominent place, and a quarter of an acre will contain at two feet apart each way, about 2,500 plants. If these are planted by August 1st, from plants layered in pots in July, the ground having been properly prepared, at least 1,000 quarts can be gathered as the first crop; this is a low estimate; the best cultivators claim to gather one quart per hill of the large fruiting kinds. Next in importance in small fruits come raspberries, blackberries, grapes, and currants, with which another quarter of an acre might be stocked. This would leave, if there were two acres at the start, an acre and a half to be devoted to vegetables. Of this one-eighth of an acre might be devoted to asparagus, and the same amount to rhubarb, beets and onions, cabbage and cauliflower, and lettuce, and to celery; cucumbers and melons, tomatoes and beans, may each have a quarter of an acre, while one-eighth of an acre may be devoted to other things not provided for. The cultivation of this quantity of land with such crops, together with the care of greenhouse, would require the labor of two active men during the summer months, and probably at some part of the time three, but in winter one man could easily do it all. One horse would be sufficient for cultivating and carting manure, etc., but the first plowing of the land in spring should be done by two horses, so that the work may be done deep and thoroughly. As to the cultivation of fruits and vegetables, it is not my object in this article to give detailed directions "how to do it," for these reference may be made to the works on such subjects, my object is to endeavor to show that the combined culture of fruits, flowers, and vegetables, can be more profitably carried on in small towns than the culture of either by itself. My first attempt at commercial gardening was a combination of the business of market gardener and florist, and even for the great market of New York, I believe it was more profitably conducted than if each had been run separately, for in wet or stormy days when it was unfit to work in the open vegetable grounds, the men were turned into the greenhouses, where their labor was just as profitable and valuable as in the open field. But while arguing for the benefits to be derived from this combination of the several departments of a kindred business, let me be distinctly understood that it must be done at *one place*, so that all can be under the eye of the owner.

Twenty years ago, after the successful culture of a garden of some ten acres, combined with quite an extensive greenhouse business, my ambition led me to think that if I made $3,000 a year from ten acres, I might as readily make $9,000 from thirty acres, so I undertook the cultivation of two other places, each of about ten acres in extent, but about a mile apart. A trial of three years showed me that I had made a serious mistake, for I found that I was actually making less from my thirty acres than I had done from the original ten, and yet I had experience, capital, and I believe as much energy and business capacity as the average of mankind. Had the thirty acres been in one spot, the result might have been different, but it is probable that the profits would not have been in the same proportion, as if ten acres only had been cultivated. This lesson was to me a salutary one, and I never hesitate to state my own case to any one who informs me of his intention of attempting to carry on gardening in two or more different places at once.

Tree-Planting in the Older States.

A few suggestions on tree-planting have been recently published by Prof. Sargent, the director of the Arnold Arboretum of Harvard University, in a pamphlet of 35 pages. It is a separate issue from the Report of the Massachusetts State Board of Agriculture for 1875, just published. It extends and supplements the remarks of the veteran Mr. Emerson (whose book on Trees and Shrubs we lately noticed), and follows them up with practical details. Prof. Sargent sums up the current testimony and current opinion about the influence of forest on climate and summer rain, upon which we have already had our say, and from which Prof. Sargent's own expectations appear to be moderate; he cites the estimate that, in order to maintain normal physical conditions, and to supply the material so essential to every branch of industry, forests should be allowed to cover about a quarter of the surface of a country; and he shows that this proportion of the surface of Massachusetts might be used for this purpose, without trenching much on improved or cultivated land. He goes on to show, indeed, by estimates, that in the long run this is the most profitable use that is likely to be made of about that proportion of the soil of his state. We do not expect the individual owners of the soil to pay much attention to the matter in regard to any possible amelioration of the climate; but they may be influenced by the prospect of pecuniary advantage, to themselves and their children, so they should look over the Professor's "Estimated profits of a plantation of European Larch, of ten acres, to last fifty years." This gives them back about 13 per cent per annum and the original capital. He supposes that there are 2,000,000 acres in his state which might advantageously be planted with larch, and prudently reducing the estimated yield one-half, or to six per cent on the capital invested, points to the goodly total of $402,830,000 of wealth to be realized from these 2,000,000 acres of poor land. Next to Larch the White Ash is thought the best tree to plant, but this, we suppose, would need a better soil. The European Elm and Scotch Pine appear to stand next in the list.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

"Home Topics."—We regret that Faith Rochester is obliged, on account of ill-health, to omit her usual contribution. Many hundreds of housekeepers will unite with us in the wish that the cause may be of short duration.

Apportioning our Time.

BY MRS. F. F., ONEIDA COUNTY, N. Y.

Some time ago in reading Dr. Todd's "Student's Manual," I was not a little troubled at not finding some of that work addressed especially to young women as well as to young men, as he appeared to quite ignore the feminine student. However, I found many ideas that were of benefit to me in school-girl days, and some still cling to me, though no longer a student, but engaged in that more practical division of life, the housekeeper's department. One of the items that still holds its original force, is that we should form the habit of dividing up our time for the following day, and of looking back at night to see where it has gone.

"How shall I make the most of my time," is a question which many an honest and thoughtful woman asks herself, as she rises in the morning, with work enough for three women, and with only just one pair of hands to do it all. If she plunges into her work without forethought or plan, she will at night find herself weary, discouraged, and heartsick, being cross herself, the children will be fretful, and the whole family out of sorts. To use the forcible colloquial, "I tell you," it is hard, unremitting drudgery, day after day, and week after week, that brings out the crossness, the coarseness, and the peevishness of a woman's nature, if there is the least vestige of it in her composition. And if she, who stands head of the household, is ill-tempered, the whole family is in the same unhappy condition. So surely as the glowing sunset reflects its beauty and glory on the earth, or the dark clouds cast everything into shadow and gloom, so will the mother's heart and life make her household either dwell in a light of joy and love, or in a perpetual shadow of peevishness and discontent.

How may the light prevail and the darkness recede? are questions which we housekeepers must meet. In the first place, let us have help when we need it and can obtain it. What if the year's expenditures do amount to a little more? "Is not the life more than meat, the body more than raiment?" The subject of overworked women has received attention in some of our periodicals of late. The wail of hard-worked, disconsolate women is making itself heard, and must be heeded, and it will be well if its discussion will contribute to the alleviation of their hard, unremitting toil.

Whatever may come of a general discussion of

the subject, each woman will do well to examine her own individual case, and see in what way she herself may lighten or dispense with some of her burdens. The woman who, with her little child, goes out on some errand, and lets the muddy and uneven walks, and the slow, dragging steps of her little one trouble her all the way, will find that her walk has been just so much extra labor added to her morning's work. But she who starts just as weary with the morning cares, and forgetting the muddy and unpleasant walks, points her little one to the beautiful clouds with their ever varying lights and shades, and the glimpses of the pretty blue just dimmed by their filmy veil; who sees the little kitten, partly hidden by a bush, timidly peeping through the fence; who, spying a little flower almost hid in the grass by the wayside, directs her little one's attention to its beauty; who has a kind word for the little boy who in his haste stumbled and hurt himself, will find that the morning walk has benefited her, and that its pleasures have in a great degree counteracted the weariness and trials of the morning. Just so in our everyday life, we ourselves will have to pick up the crumbs of comfort and enjoyment along the way, or they will be lost, and none be the better, but we and our households be far the worse for it. She who assigns her task for the day beyond her time and strength, may by constant hurry and labor accomplish it, but patience and strength will be gone, so that there will be no pleasure in completing it. We all know how hard it is to be unable to carry out a plan when we have made up our minds to accomplish a given work within a given period. Our nerves are irritated, and we have a kind of disrespect for ourselves. One way to avoid this is, never lay out before us more than our time and strength will allow; we will not say ability, for frequently when an effort is made in the right direction, we find ourselves in possession of more than we thought.

Let us look over at night the work of the past day, and see what we have failed to accomplish. True, some days it will seem as though we had utterly failed, and the day lost. Unexpected company arrived. The "only a minute" call of your neighbor was a full hour. Little Charley was unusually fretful and worrisome, and on the whole, aside from the usual routine of breakfast, dinner, and supper, hardly one plan has been carried out. But never mind, only don't let it worry you; keep in mind the advice of an eminent thinker of the age: "Neither let mistakes nor wrong directions, of which every one falls into many, discourage you. Let us try faithfully, manfully, to be right, we will grow daily more right. It is at the bottom the condition on which all men have to cultivate themselves. Our very walk is an incessant falling—a falling and catching ourselves before we reach the pavement." —Examine carefully the work for the following day; decide upon what must be done, and what may be left undone, and leave a wide margin for any emergency. But you are so weary when the work is all done, that you feel more like resting than forcing yourself to think. Well, leave the working of those last five button holes until some other time, and don't put that trimming on Minnie's apron to-night, but rest your tired hands awhile. Harder work. Yes, I know it is harder than to keep right on in the same line you have been traveling all day. But it will not be so hard to-morrow night, one week from to-night it will be still easier, and in a month from now, if you keep up the plan, it will be a recreation and even pleasure. But to begin, whether there is help in the kitchen or not, some attention will have to be paid to the meals. If you have all the work to do, and any extra baking, together with the other household duties, the five button holes and Minnie's apron will be all, perhaps more than all, the sewing you ought to think of doing. But what is a great deal of work in one family, is not quite so much in another, and what one woman finds to be a difficult task, another woman, with her experience and conveniences, will find comparatively easy. But the gist of what I want to say is this, don't plan for your morrow's work any more than it seems to-night you can easily accomplish.

There was little Charley when he was so sick last spring, with the croup and spasms. The doctor explained to you the nature of his sickness; he said something about the contraction of the muscles, and of the trachea, larynx, and glottis; the names, of course, were all familiar to you, and you, relying on your two school terms study of Physiology, thought you understood all about the throat. But somehow what the doctor said was a little confusing to your ideas, and you inwardly resolved that you would study up the matter, but there never has seemed to be any time for carrying out your resolve. Well, put that down as part of your work for the morrow. The old school book may look dingy, but a half hour's study will quite refresh your memory, and you will not forget it this time, for it has a practical bearing on your own experience. In your studies you will probably find still something else that you ought to understand more thoroughly. If you have not time now, reserve that until some other day. Then there was Minnie, only yesterday, looking at the plants in such an admiring manner, and had first noticed the difference in some flowers. She asked you a question about the flowers which you could not answer. At the first opportunity let your school Botany be taken down from the shelf; you will find that it can still kindle your enthusiasm, and your mind will be younger and fresher, not only from the old associations indelibly impressed on every page, but from the actual knowledge you have obtained. And you yourself will not be the only one benefited thereby; for the little ones will be inspired with a love for and interest in the world of beauty around them.

So keep on for a week, and you will be surprised how much more you know at its close than you did at its beginning. It is astonishing how much we can learn within a week if we will but turn our attention in the right way, or how much we can lose by becoming indifferent to our opportunities. There is probably no woman who can not have at least one half hour a day for self-improvement if she will but make up her mind to take it. And she *should take* it, as it is a duty that she owes to herself and to her family.

One great general excuse that we are not better, that our lives do not amount to more than they do, is "lack of time." Yet we have all the time there is, and all the time we ought to need. The Hebrew king anticipated the wants and excuses of mankind when he so particularly specified the time for so many different employments. To this we may supplement for ourselves the blessing given to one of a still earlier period, "As thy days so shall thy strength be."

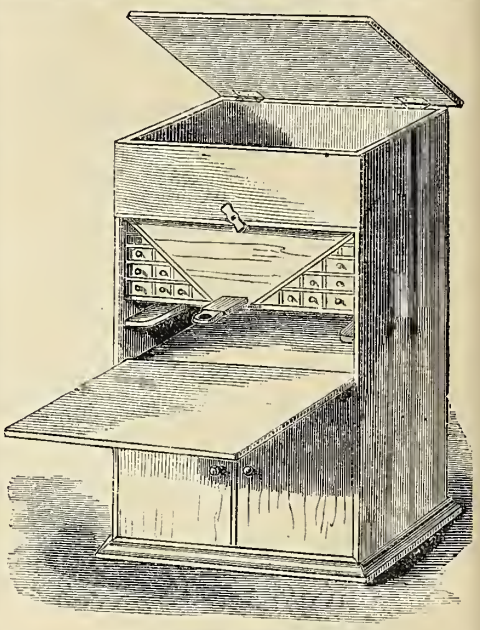
How to Make a Mud Mat.

At this season of the year, mud is one of the house-wife's troubles. Those who work in the fields or in the barn-yard, cannot help having mud upon their boots, and some means must be provided to prevent it from being carried indoors. Have a few mud mats about the doors and yards, and this trouble will be avoided. They may be made very easily. Procure a few dozen of common one-inch-square fence pickets, three feet or more in length, and a few branches or stems of elder an inch thick. Bore holes through the pickets in four places—near each end and two between—large enough to admit No. 9 fence wire; saw the elder stems into pieces an inch long, and force out the pith; then string the pickets and pieces of elder together alternately, in the shape shown in the illustration. Place washers over the ends of the wires, and after cutting the ends the proper length, rivet them down upon the washers. These mats may be kept outside of the door-step, and if the boots are rubbed upon them, the soles will be freed from much of the coarser mud or earth adhering to them, and will not "muss up" the ordinary door mats nearly so much as without their use.

A MUD MAT.

A Flour and Bread Closet.

The accompanying engraving shows the manner of making a very complete and compact flour chest with bread closet, bake board, and shelves; it also has drawers for spice and other articles used in bread and pastry making. Economy of room in the kitchen and cleanliness in use are two most desirable features in this contrivance. It is made like an ordinary cupboard 5 feet high, 3 feet wide in front, and 2 feet deep. At the upper part is a

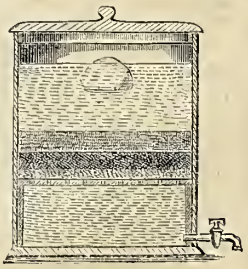


A CONVENIENT FLOUR-CLOSET.

flour-chest which will hold about a barrel of flour; this is made with sloping sides, and has a slide at the bottom, which, when drawn out, allows the flour to fall into a pan placed under it. At the front of the closet is a falling door held, when closed, by a button, and when down is supported by the lower doors, which are half opened for this purpose. A round pin is fitted on to the top of each lower door, and this enters into a round hole in the falling door as it rests upon the other doors; this is to prevent them from moving away and releasing the falling door. The falling door is the bake-board or bread-board. A recess beneath the flour chest has a shelf around it, and serves to hold rolling pins, mixing pan, shapes, and other utensils. At each side of the flour chest in the angular space left by the sloping sides, there are drawers for spice, soda, cream of tartar, and other matters. The cupboard below contains the bread crocks or bread shelves, pies, and other baked food. The cupboard should be made of the best well seasoned clear pine; it may be stained to imitate walnut, and varnished or oiled with boiled linseed oil. The joints should be closely matched to exclude vermin of all kinds, and dust, and if well made and kept perfectly clean, will not only be useful and convenient, but ornamental to a neatly kept kitchen.

Pure Drinking Water.—A Filter.

Pure water is a most important thing, but that from wells is often contaminated by injurious matters. The well is too frequently in too close proximity to a cess-pool, a drain, or the barn-yard, and in country places, where one would suppose the water should be of the purest kind, is, from these causes, charged with the most deadly poison. Decaying animal matter in solution in water is as deadly a poison as arsenic or strychnine, and many persons die from disease which has been caused by



WATER-FILTER.

drinking water thus poisoned. When boiled, the chance of infection is much lessened, and it is in the drinking water that this danger most frequently exists. By properly filtering the water for drinking, it becomes much safer. A filter may easily be made of a common 4-gallon earthen or stone crock,

No. 449.—Puzzle Picture.—A remarkable bouquet of violets. Three profiles, named in the article on Puzzle Pictures, are to be sought for, and will be very plain when once found.

in which a hole for a tap is made near the bottom. These may be usually purchased at the stores, or an ordinary crock may be pierced for the purpose. A round piece of slate is made to fit the inside of the crock, and is supported by some pieces of stone, at a hight of 3 or 4 inches above the bottom. This piece of slate has several small holes made in it to allow the water to pass through, and is covered with about an inch of fine washed gravel. Upon this is placed 2 or 3 inches of hardwood charcoal, broken into pieces no larger than peas, and also well washed. On this is placed a layer of fine gravel and sand. The arrangement of these layers is shown in the engraving. The water to be filtered is poured into the space above the filter, and it will slowly percolate through the gravel and charcoal, to be drawn off at the tap below. Water thus filtered will be purified as much as can easily be done by any mechanical means. A piece of ice may be kept in the jar to cool the water during hot weather. The use of the filter should not induce a neglect of the source of danger, and every expense to secure the well from contamination will be money well laid out. The filter should be occasionally renewed by thoroughly washing the gravel, and using fresh charcoal.

Fly-specks on gilt and bronze. "Mrs. A. E." So far as the specks go, they can be removed by the use of a damp cloth, especially on a moist day, when they are softened. But they seem to be singularly corrosive, and leave a spot behind, where the surface of the article has been discolored or removed. We know of no help for these but regilding the spots or touching them with bronze powder of the proper color.

Varnish for Books.—"H. M. R." Book-binders do not use common varnish, but a thin varnish made with bleached shellac and strong alcohol.

Horse-radish Sauce.—Clean and grate one stick of horse-radish, place in a saucepan, and add a cupful of soup, two tablespoonfuls of dried currants, a little sugar, a teaspoonful of vinegar, and some salt; place over the fire, let it come to a boil, and serve. This sauce is very popular among the Germans, by whom it is much eaten with soup-meat, and is good with other boiled meats.

BOYS & GIRLS' COLUMNS.

The Dog Story Prizes.

Attention!—You will recollect that in February last I offered prizes for some dog stories. The time for sending these was up on March 15th, quite too late for the awards to be published in April, where I suppose many of you looked for them. You will not understand how it is, perhaps, but I must tell you that a part of the paper, where most of the engravings are, and in which are the "Boys and Girls Columns," is printed about two weeks earlier than the other part. As those who are examining the stories find it a long task, their report can not be given in *your* columns, but you will find it in another part of the paper, among what are called "Basket Items." The Doctor.

Old and New Puzzle Pictures.

We call "puzzle pictures" those pictures which contain more than appears at first sight; the eye is led away from the main thing in the picture by objects which show so strongly that they fix the attention, and in looking at these you do not see other things which are there, but not seen because other parts of the picture are made more striking. We do not know if any one has ever studied the history of pictures of this kind, but we think it will be found that they were first made in the times of political trouble in Europe. In this Centennial year, it is well for you to be reminded that we shall celebrate the time when, 100 years ago, our grandfathers said that the people and not kings should rule, and that every one should be free to read what books or papers he chooses, and to have in his house portraits of just such persons as he cares to have. Even at present, in some countries in Europe, one dare not have certain pictures in his house, or offer them for sale. In the many changes in France, where kings and emperors followed one another very suddenly, the friends of the monarch who was out, had to keep very quiet, and did not dare to have even a portrait of the one they admired. The French were much like other people; when a thing was forbidden, they were all the more desirous to have it, and many ingenious ways were invented for getting the portraits of their favorites. The heads of canes were so made that, though they looked like very common cane-heads, when held between the light and a white wall, the shadow would be a profile of the unpopular king. Vases of porcelain or alabaster were made which looked innocent enough, but their shadows gave portraits which could not be safely had in any other way. So when the first Napoleon was unpopular, his followers had to hide all portraits of him, but an ingenious artist contrived what we now call a "puzzle picture," which appeared to be only a bunch of violets, but when carefully examined, showed a portrait of Napoleon himself, with his flabby cocked-hat, that of his wife, Marie Louise, and of his son, Napoleon II, who you know died young. We published this bouquet of violets 13 years ago, and as those who puzzled over it as children at that time, are now it may be fathers and mothers, it will be quite new to our boys and girls of the present time, so we give it again (No. 449). When we were very young—how long ago!—there was a picture that we thought a great wonder; it was the first puzzle picture we ever saw, and we recollect to have often and long stopped to gaze in at the shop-window where this remarkable work of art was exhibited. What was our surprise to receive the other day from Aunt Sue a time-stained copy of that very picture! You can imagine how pleased we were to see this bit of the long forgotten past, and as it illustrates this talk about puzzle pictures, we give it here instead of in Aunt Sue's Chats, and we are sure she will not find fault with us for doing so.

AUNT SUE SAYS:

"'K. S. B.' has been kind enough to send us a 'very old' picture, to be copied into the *American Agriculturist.* [We give it as No. 450—Ed.] It says upon the picture, 'drawn from nature on the spot'; but I am inclined to think that a little of it was drawn from imagination in the artist. You will observe the 'shade of the mighty dead' (Napoleon) between the two trees; and if they really presented that appearance on the Island of St. Helena, where Bonaparte spent his last days in exile, I think the fact would have been mentioned more as a miracle than as a natural curiosity."—When puzzle pictures were less common than at present, this was thought to be a great curiosity, and we recollect that many persons "couldn't see it," after the figure of Napoleon had been carefully pointed out to them. In former numbers we have given you many very ingenious pictures of this kind, which are a great improvement on this old Napo-

No. 450.—Puzzle Picture.—Napoleon at St. Helena. From a very old engraving, sent by Aunt Sue. You will see the exiled Emperor as plain as can be, if you only look in the right place, and when you see him, you will wonder how it could puzzle any one. The original is colored, which makes it more of a puzzle than it is in black and white.

No. 451.—Puzzle Picture.—Not a very pleasing subject, but rather puzzling. Look carefully, and you will find something very "striking."

leon picture. By way of contrast, we give one (No. 451) which is quite ingenious, but the subject of it will better please the boys than it will the girls.

What is Done with Goose-Quills.

A goose is not so fine nor so proud a bird as a peacock, but it is a far more useful one, and when you come to learn to how many uses its feathers are put every day of our lives, in many parts of the world, you will think more of a goose than ever before. Every person, young or old, knows that beds and pillows are often filled with goose feathers and down, but since quill-pens have almost gone out of use, few people think of what becomes of the quills. Years ago, before we had steel or gold pens, everybody used to write with quills, and learned to make their own pens for themselves. Now few quill pens are used, and most of those that are, are made by machines. But this is one of the least of the uses to which quills are now put. Besides their use as pens, the hollow part or "barrel" of the quill, serves as handles for paint-brushes, or camel's hair pencils as they are called; toothpicks, tubes for discharging cannons, and floats for fishing are made from the quills; the little pieces left after cutting out these are used to make parts of children's toys. But the most curious of all things about goose-quills, are the uses which are made of the feather parts of them, such as a variety of toys, the curled trimmings for ladies' hats and dresses, artificial flowers, plush for velvet wall-papers, carpets, and door-mats, and rugs, and lastly felt and woven cloth for dresses. What next will be made from goose-quills who can guess after all this.

Fig. 1.—PARTS OF A QUILL.

Suppose you take a goose-quill and hold it while we talk about it. When you look at it you will see that it has a "vane" or feather upon each side, and one of these is narrow and the other much wider, and the two coverings of the back, or upper part of the stem between these vanes, are hard and horny, but smooth, one being very thin and the other thicker, while on the under side the covering is softer, and has a groove up and down the middle of it. When the covering is taken off, you find a soft spongy pith under it. Let us take a very sharp pen-knife, and divide our quill into these separate parts as is seen at figure 1. To do this well we should soak it in warm water, when it can be done easily. First we take off the thin upper horny covering of the back, marked 1 in the engraving. This is called by the French people, who do the most of this work, the *brillantine*, because when it is stripped off it shows all the colors of the rainbow very brightly. This is used by the milliners for trimming bonnets, and mixing with curled and floating feathers for ladies' head-dresses. These strips are tied up in packages of one thousand each, and 10 packages are put into a bundle, and if we were to look into one of these factories, we might see great piles of these bundles, and should wonder where all the geese lived from which so many quills had been procured. The *brillantine* is stripped off by women, who are paid about 16 cents for every thousand strips, but they do it so quickly that they earn very good wages even at that low rate. Then we should strip off the small vane with our sharp knife, and this, marked 2, is called the *biot*, which the French pronounce *beeo*. This is dyed of various colors and curled, when it is used to make wreaths and piece trimmings for bonnets, hats, and sacques, and also artificial flowers. Then we take off the large vane marked 3. This is dyed, and in dyeing are made proof against moths, when they are woven in amongst the threads of stout cloth, and made into handsome carpets and rugs, which are very durable. To give the carpets the appearance of velvet, the feathery surface is brushed with stiff brushes, worked by machinery, for several hours. Neither mud nor dust will stick to these carpets. Next we take off the second covering of the upper side, marked 4. This is very strong and horny, and in the factories this is done by a machine, something like one of our planing mills. A roller draws the quill over a sharp blade, which strips off the covering. At one of the factories it was tried to make *straw* hats of these strips, but when one of these hats was caught out in a shower, it curled and twisted out of all shape so badly, that no more were made. The strips are now split into very narrow threads like wires, in a machine, which is tended by women and girls, and these threads are dyed and made into hair brushes and others, or into artificial flowers, serving as awns or beards for wheat, barley or rye heads, or thorns for prickly plants. After this we would strip off the under covering of the quill, marked 5. This is used for similar purposes as the last mentioned, but is much softer. It takes 3,000 of these strips to weigh a pound, and a smart girl will make 6 pounds in a day, putting one at a time through the rollers of the machine. There is nothing left now but the pith, marked 6. This is much like the pith of a rush, or a piece of elder wood, and is ground up to a sort of fine woolly dust, which is dyed and scattered upon the glued sticky surface of wall-papers, making the fine velvet or flock papers, which are sold at high prices. This plush used to be the wool dust made in shearing "broad cloth;" but now the quill dust is found to be much better, and the wool is only used on cheap papers. This ends the feather part, and we have the barrel of the quill left. These are sorted very carefully into different sizes, which are numbered from 1 to 20. Those of one particular size are selected one by one for tubes for firing cannon. These must all be exactly of the same size, or they will not fit the touchhole, and a goose has but two of the proper size, while many have not a single quill suited for this purpose. Every month at the arsenal of Toulon, in France, alone, 54,000 of these tubes are received; you can judge of how many geese must be killed every year, to furnish all the quills needed for this one use. The next best quills are used for making handles for small paint brushes. Then come the tooth-picks, and a hundred million a year of these are made in France, and many millions elsewhere, and sent all over the world for sale and use. To make these the quills are first cleaned by soaking them in water and rolling them round in a barrel, by which the thin outside skin is worn off, and the inside marrow or pith shaken out. Then they are put one by one into a machine which has a sharp knife moving up and down very quickly, and cut into the shape shown at figure 2. This machine counts the tooth-picks as they are made, and keeps the count by means of wheels, which mark up to 1,000,000. Some of the tooth-picks used in this country, have the name of the hotel for which they are bought stamped on them, and some of those used in Spain have mottoes on them, as we have on some of our candies. These are stamped upon the quills before they are cut, by first placing them in warm sand, and then pressing them upon a cold piece of iron upon which the words are engraved. The sudden cooling by the cold letters, makes the quill clear and transparent where the letters touch them, but no where else. When the quills are made they are packed in bundles for sale. The machine for doing this is shown in figure 3. A girl fills the holder, *A*, and slips the ring *B* around the bunch, which is then taken out and tied with two bands, as seen at *C*; they are then ready for sale. Pens are made by slitting the quills with a fine circular saw, and stamping them out by a machine, which also counts them as they are made. The poorer quills are made into floats for fish-lines. The points, which are cut off and washed, are used in toys for children; they have one end stuck into a wooden roller or shaft, and when this is turned by a crank, their other ends touch some stretched wires, and make what the little folks call music, but their parents call it something else. The toy makers can not get enough of these points, and they are sent to many countries for this purpose. The tops of some of the quills are dyed and made into windmills for children, and are also now put together to make bird's wings for trimming girl's hats, and the small red feathers for small boy's hats.

Fig. 2.—MAKING TOOTH-PICKS.

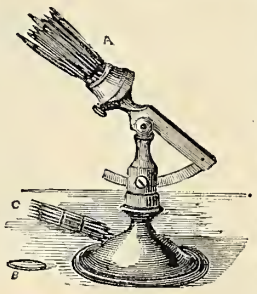


Fig. 3.—BUNCHING.

The Doctor's Talks—About Raising Plants.

Mary M. L., Moline, Ill., would like to know how to grow a rose-bush from a slip. I have no doubt that many other girls, and some boys, would like to know not only about roses, but other plants, and I think I will make a "Talk" about it. Those who have plants would raise other plants for themselves, or to give to their friends, if they knew how easily it was done. There are many plants which ripen seeds very rarely, or not at all, or if sowed the seeds would be a long while in growing large enough to flower, so these are raised by taking a piece of the plant and putting it in the earth to take root; the old way was to pull or slip off a little branch, and the piece was called, and sometimes is now, "a slip." But that is a slow and wasteful way, and now gardeners cut off the right kind of pieces and call them cuttings. A great many plants are raised from cuttings, some florists turning out hundreds of thousands every year; there is no secret about it, and with the common plants, boys and girls can do this as well as the florists. You have, no doubt, raised plants from seeds; some of you will recollect that a few years ago I told you all about seeds; that there was a little plant in each seed, not a very perfect plant, but in most seeds you can see a little bit of stem and one or two leaves; when the seed is put into the ground, this little plant, often bent up by being packed away so closely, straightens itself out, and very soon roots appear on the little stem, and the plant which began to grow before it had any roots, grows all the faster with them, for you of course know that one use of roots is to feed the plant; they take up the water in which much of the plant's food is dissolved, and give it something to grow with. Seeds have inside of them some food for the plants to use until they have roots and can feed themselves. Now, in a cutting we take off a piece of a stem, and in the first place let us examine a stem and see what we have to deal with. Here, figure 1, is a cutting of a Fuchsia. You see it has a stem and leaves; there are four good sized leaves, and at the very top two just growing, and if you examine the living plant, you would see a little point or knob between these from which more leaves will come, and as these leaves enlarge, a bit of stem grows too, to lift them above the older leaves; the stem keeps growing longer, and more leaves unfold. This growing point at the end of the stem is the terminal bud. You will see that where the lower leaves join the stem, there are other buds (only one of them shows in the engraving), these buds are called *axillary* buds, as they are placed in the *axilla*, or armpit, where the leaf is fastened to the stem. When these buds grow they form branches just like the one from which they start. While plants are growing their buds are not so plainly seen as when at rest. If you look at the trees and shrubs that drop their leaves in the fall, you can see the buds very plainly. Figure 2 is the stem of a horse chestnut; you see at the top a very large

Fig. 1.—FUCHSIA CUTTING.

Fig. 2.

Fig. 3.—CUTTING WITH CALLUS.

bud, which is ready to grow in spring, and though the leaves have fallen, you see the scars or marks where they were, and just above them the axillary buds. In making a cutting we must have a stem and one or more buds, we have taken this away from the plant, and the first thing it needs is roots, so we set it out in the earth where we hope it will make them. The little plant in the seed has food provided to help it form roots; the cutting has in its stem and leaves food that would have been used to make more leaves, but it now uses it to

Fig. 4.—ROSE CUTTING.

make roots. Most cuttings when put into the soil make first a whitish bunch at the bottom, sometimes large, as in figure 3, and often much smaller; this is thought to be matter gathered there to feed the roots, which will soon start near by. This bunch the gardeners call a callus. After the roots begin to grow, then the buds on the stem of the cutting start, and we have a plant able to take care of itself. Several kinds of cuttings are made; there are those taken when the plant is not growing, but the leaves have fallen and the plant quite at rest. Grape-vines and currant bushes are grown from cuttings of this kind, and the gardeners sometimes treat roses in this way. But you will be likely to make cuttings with the leaves on. Florists manage their roses in a way that you cannot, and they make a plant from every bud as in figure 3; you will need to take longer cuttings, as in figure 4, which have several leaves with a bud to each. For home-blooming roses, when you can find new shoots that have made buds at the place where the leaves join the stem, that is the best time to make cuttings; if the cutting has three leaves, cut off the lower one, and put the stem into the soil up to the second leaf. Unless the soil is very sandy, use pure sand in the pot, putting something in the hole to keep it from running out. The cuttings are put in, the sand well pressed down and kept moist, and while the cuttings must have light, they should not be put in the direct sun. You can treat all kinds of geraniums, fuchsias, and many others in this way; if you try carnations, you must keep them very cool and give them a long time. As soon as any roots have grown, the cuttings should then be put into good soil. Some cuttings will root well in common earth, but those with soft stems are apt to rot, and good clean sand is better. There is another way that some of you may like better. You want a deep saucer, or soup plate that will hold an inch depth of sand; you then make cuttings with one or more buds, from an inch to two inches long, and stick them in the damp sand; if they are so close as in figure 5, as to touch each other, all the better. You then sprinkle on water from a watering pot until the sand is as wet as mud, and set the whole in a window, where it will have a plenty of sun. Cuttings of plants with soft stems like verbenas, heliotropes, and fuchsias, should be put in when very young and tender. Plants root very quickly in this way, if you do not forget to keep the

Fig. 5.—SAUCER WITH CUTTINGS.

sand wet all the time. If it once dries up, you will have to begin over again. At the end of a week you can take out a cutting of each kind to see how it is doing; when they show a thread of a root, they must be set out in good soil. Some will take root in a week or ten days, and others will take two or three weeks. But don't forget to keep the sand very wet all the time. THE DOCTOR.

Aunt Sue's Chats.

Here is a letter from "D. O.," Perry Co., Ohio, which says:—"Dear Aunt Sue—You gave directions in the *American Agriculturist* about making kites, but didn't tell how to make the tail. Our little boy has been trying to get his kites to fly, but can't, and he thinks there must be some deficiency in the tail. Nothing would do; but I must ask Aunt Sue to enlighten us in regard to making a tail for the kite. As we know nothing about the art of kite-making, he made his kite according to the directions you gave. If you can get time, please answer and oblige."—Now who would ever have thought that I should become instructress in kite-making and kite-flying! Or who would ever have thought that any boy who lived in America didn't know how to make a kite-tail. Well, "our little boy" shall have my best instructions on the subject. The prettiest tail for a kite is made of paper and string. Cut a newspaper into pieces about five inches square, and fold each piece until you have it about 2½ inches long by ¾ wide. Have a piece of string 6 or 8 yards long, and put one of these folded papers into a slip knot, so that they will be about an inch apart all the way down the string. Figures 1, 2 and 3 may give you a better idea than you could get from my description. Finish the end of the tail off, with a paper tassel, made by cutting a paper into fringe, and rolling it up. Then the construction of such a tail as this is a capital occupation for boys who would be otherwise waking the baby, or break-

Fig. 1.

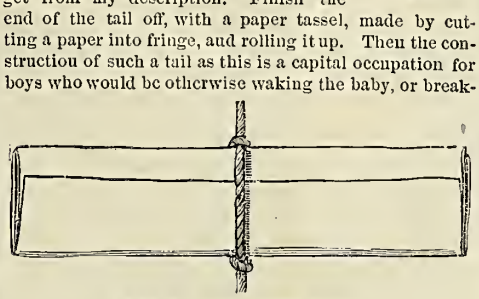


Fig. 2.—TYING THE TAIL.

ing things. Not that "our little boy" does these!—There is, however, one great drawback to this kind of tail; it is so liable to get into "snarls"; but if you have plenty of field room, where you can lay out the tail nice and straight before raising the kite, you will be charmed with the effect. The kite-tails most commonly used, and

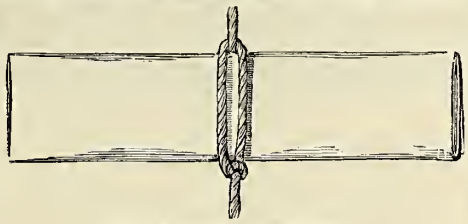


Fig. 3.—TYING THE TAIL.

which seem to answer the purpose well enough, are made from long, narrow (two or three inches wide) strips of old rags of any kind, knotted together. From four to ten yards are needed, according to the size of the kite and the strength of the wind. For a very light tissue-paper kite, a tail one inch wide would be in order.

Aunt Sue's Puzzle-Box.

ANAGRAMS.

1. Stab prelate.
2. In pale sun.
3. Pray over Bill.
4. I ran, told it A.
5. None suit us to a T.
6. Bravo rode.
7. Rout, famine, Cas.
8. Nay, go guess.
9. Medical pie.
10. Now tear me. K.

METAGRAM.

A section of a city take;
A change of head will quickly make,
At first, what warns us time is short;
Again a number of one sort.

Behead me now, and I contain
The key you need; and when again
My head you change, I then become
Something to drink—a wine—not rum. HENRY.

DECAPITATIONS.

1. Behead an instrument of torture, and leave a tree.
2. Behead an animal, and leave what it might eat.
3. Behead an uncomfortable sensation, and leave the channel by which it may have come.
4. Behead what we all have, and leave a number.

G. H. Y.

SQUARE WORD.

1. A juice extracted from various palm trees. 2. A certain kind of drama. 3. To exclude. 4. Delineated. 5. Woollen threads. JOHNNY SMITH.

CROSS WORD.

My first is in shatter but not in break,
My next is in biscuit but not in cake,
My third is in man but not in boy,
My fourth is in doll but not in toy,
My fifth is in shower but not in rain,
My sixth is in riches but not in gain,
My seventh is in tree but not in bush,
My eighth is in haul but not in push,
My ninth is in wine but not in feast,
My whole is a country in the east. PAULINE.

CURTAILMENTS.

(*Example:* He saw the *seal* dive into the *sea*.)

1. His —— was such as to make me sure of not receiving a ——.
2. I asked him if he had —— and he answered ——.
3. Just for —— he made me stay at the ——.
4. He killed his —— by not trying my ——.
5. He had a —— and also a —— with him. NIP.

DIAMOND PUZZLE.

1. The edge of a rim. 2. A cover. 3. An ultimate atom. 4. Alterations. 5. One of the United States. 6. To throb. 7. A blow. 8. You have all done. 9. Part of a state. T. T. C.

NUMERICAL ENIGMA.

I am composed of 22 letters:
My 6, 7, 8, 9, is part of the face.
My 16, 15, 14, 22, is an ornament.
My 16, 17, 18, 5, is an article of clothing.
My 12, 1, 2, 3, is part of a ship.
My 19, 11, 21, 13, is a number.
My 12, 20, 10, 13, is an insect.
My 4, 10, is a pronoun.
My whole is a very true proverb. BELLE.

PI.

(This sentence was selected for its sentiment. If every man, woman, and child, who sees it, will translate it, he, she, or it, will get a sermon in a nutshell.)

"Yhw od ony hows frova ot rouy simence sindate fo stedorginy meth?" dais a fatinchie ot het roperem Smudginis. "Od I ton oysterd ym seenmie yb magiuk meth ym denfris?" saw het peermor's blone plyer.

HIDDEN CAPES.

1. I love Fanny, dearly. 2. I dislike tobacco; do throw away that cigar. 3. Do not let that wood char, lest we smother. 4. Look out Eddie, or you will fall. 5. When rye is ripe, it is a pale yellow. 6. Stop a moment, mamma, your dress is caught. 7. The trees are shorn of their beauty. 8. Those children you spoke of, are well provided for. LITTLE ONE.

POSITIVE AND COMPARATIVE.

(*Example.* A pronoun; mud.—*My, mire.*

1. A man's name; money. 2. Meat; a tool. 3. A pronoun; a pitcher. 4. A house; the inside. 5. A germ; a tree. 6. A blow; a dress. BESSIE.

ANSWERS TO PUZZLES IN THE MARCH NUMBER.

BISECTED EASTERN CITIES.—1. Madrid. 2. Warsaw. 3. Portsmouth. 4. Barmen. 5. Limerick. 6. Leyden. 7. Canton. 8. Bagdad.

DOUBLE ACROSTIC.— M—ississipp—I Maine, Idaho.
A— uklan —D
I— ndian —A
N— ort —H
E— br —O

PI.—Thrift is better than an annuity.

CROSS WORD.—Northfield.

NUMERICAL ENIGMA.—J. Grey, pack my box with five dozen quilts.

SQUARE WORD.—H A R P
A R I L
R I C E
P L E A

No. 448. PREFIX PUZZLE (*page* 105).—1. Estate. 2. Knight. 3. Harm. 4. Acorn. 5. Vice. 6. Zone. 7. Whole. 8. Chill. 9. Glance. 10. Jangle. 11. Open. 12. Flakes. 13. Race. 14. Narrow. 15. Usage. 16. Shut. 17. Least. 18. Drum. 19. March. 20. Pink. 21. Yawl. 22. Bear. 23. Tale.

Thanks, for letters, puzzles, etc., to M. L. G., Lucy and Sunie, S. L. P., S. Kipper, Snippy, C. A. N., Frank H. N., A. R. F., Jr., L. J. S., Grace Terry, M. J. Carter, Norman R. S., L. J. S., Sue K. Sudds, Addie L., Charlie, H. S. Y. B. B. W., J. C., Mary A. E., and Mortimer.

Puzzles should always be accompanied by their answers. Those on subscribers' names are not of sufficient general interest for publication.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

Robbie's Dream.

BY LILA V. NORTH.

All the afternoon the rain poured down, washing over the sidewalk, rushing through the gutters, and driving the very beggars, who never seem to mind the weather, into whatever wretched shelter they could find. Robbie had a place of shelter too, though not a wretched one. It was a large, pleasant room, with a cheerful coal-fire burning in the grate, a bright carpet on the floor, and pretty pictures on the walls. Robbie's own little lounge was in the corner, and his hobby-horse in another; on the wall hung his book-rack with the many books his friends had given him, and under it the little table, at which he sat every morning to study. But to-day one could hardly see the pretty carpet, it was so strewn with books and toys. A company of soldiers lay in terrible confusion in one part of the room, and near them were the lion and the monkey belonging to his menagerie, while the elephant and the brown bear had been thrown under the sofa, and some of the smaller animals were in

great danger of being run over by the big hobby-horse. A train of cars had been stopped half-way in its journey from the bed to the table, by running over Mr. Punch, who lay helpless and wounded on the floor. A small man-of-war, with the American flag flying from her top-mast, had been wrecked on the foot-stool, and her crew were in great danger, though Robbie seemed to care little for that. He sat in the midst of the disorder, drumming on a drum with all his might, making so much noise that his mamma could hardly make herself heard when she came to the door.

"Robbie! Robbie!" she cried, "stop that dreadful noise this minute, and oh! look at this disorderly room! It's this way every day you stay in-doors. Now, Robbie, you shall not have one bit of supper to-night, until this room is put in order. I have often told you I should punish you if you *would* be so careless,"—and so saying, his mother left the room....Robbie flew into a terrible passion, he flung his drum into a corner, and the drumsticks after it, Mr. Punch was not far behind, and the train of cars soon followed. In a few minutes the beautiful toys lay heaped one upon another, and Robbie threw himself on the sofa to nurse his angry thoughts.

"Ma always spoils my fun. As if I can't do as I like with my own things! I guess I will!" he said aloud; but there was no one to answer him, and he soon grew tired of talking to himself, and lay very still, looking into the fire. For a long time nothing was heard but the pouring rain outside, and the crying of the wind in the chimney, and the fire was growing misty and dim before Robbie's eyes.--Suddenly a strange noise came from the pile of toys. Robbie raised himself on his elbow, and looked over toward the dim corner. He could scarcely believe his eyes. Mr. Punch was standing up and beckoning to the animals, as though he were alive!

"Come," he said, "come on, all of you! It's time this thing was stopped. I, for one, am not going to be a slave any longer. Let's have a meeting, and see what is the best thing to be done!"

At this the elephant, who had been lying on his back with his legs in the air, turned suddenly over on his feet, and walked out of the corner, followed gravely by all the animals. The soldiers too, formed into a company, and marched forth to the sound of the drum and the fife. The engineer of the railway train started off with his passengers, and the crew of the man-of-war, which was now a perfect wreck. Even Jack came out of his box and joined the procession, followed by a tin expressman leading his tin horse, still lame from a kick Robbie had given him. Noah and his three sons ran hastily out from under the bed, where they had been hiding, and a red monkey jumped down from the mantel. They all gathered round Mr. Punch, who stood on the stool to make his speech.

"Friends," he said, "you all know the cruel tyrant who owns us. Not one of us but bears the mark of some wound he has given us. I'm sure I shall never get over this last injury to my back, and many of you have been more badly treated than I. What shall we do? Shall we be slaves any longer?"

"Never! never!" shouted the soldiers, cocking their guns. "Death to the tyrant!"—"Tread on him!" snorted the elephant.—"Squeeze him to death!" growled the bear.—"Tear him to pieces!" roared the lion.—"Leave him out of the Ark!" cried Noah.—"Hurrah!" screamed Mr. Punch, jumping from the foot-stool with a grin, "follow me!" At this the whole company rushed toward the lounge where Robbie lay helpless with fear. Just then there was a loud rap at the door, and Robbie started up, trembling, and covered with perspiration,

"Oh, Pa, how glad I am to see you!" he cried, as his father entered, "Something dreadful is going to happen, just look at my animals."

"Well," said his father, "I see them, they are in a very disorderly heap in the corner."

Sure enough, there they lay, just as Rob had left them; the monkey was on the mantel, and Noah and his three sons still under the bed.

"I must have been dreaming," he said, "but I'll never do so again."

"Do what?" asked his father, but Robbie did not care to answer, he only put his toys carefully away, and went down to supper with a very sober face.

THE CHILDREN'S MAY DAY.

May Day.

The first day of this month is called May Day, and it has been celebrated from very early times. The rude people who once inhabited England had priests who were called Druids, and these used on May day to light large fires on the tops of the hills to show that they were glad that spring had come. Then the ancient Romans, who had gods and goddesses of various kinds, had a goddess of flowers, named Flora. Those old people had so many gods and goddesses, whose particular days must be celebrated, that it is not easy to see how they found time to do much else; people complain that we, nowadays, do not have holidays enough, but the ancients had altogether too many, and if the boys and girls of old Rome got as tired as those of new America do on the 4th of July, the poor youngsters must have had a hard time. Flora required a great deal of celebrating, as her holidays were from April 28th to May 2d, and these days were called *Floralia*. When the Romans went to England they took their holidays with them, and the present custom of celebrating May Day, comes from the old Romans. Two or three hundred years ago, the first of May was a great day in England; it was held as a holiday by all classes; even the king and queen, and all the court, going out to the fields to bring home fresh flowers. For a long while it was the custom in every village to put up a May pole on the green, strung with flowers, for the people to dance about. The favorite girl of the village was crowned with flowers, as the May Queen, and there was much feasting and frolic. When our ancestors from England and other parts of Europe came to this country, they tried to make it seem homelike, so they gave the new plants they saw here the names they had known at home, and they tried to celebrate the holidays they had observed at home. Those who settled in Virginia, and the warmer parts of the country, could keep up the May Day frolic, but those who came to New England had a hard time in keeping May day. In our northern States there are very few flowers on May day, and the weather is often quite cold, and though some persons, even now, try to keep up the custom, it is nearly forgotten. Even in England the day is less noticed than formerly, and the custom of celebrating it will no doubt die out in time. But you need not go back to heathen Rome for an excuse for celebrating the return of spring. If the first day of May does not bring flowers, then you can take the last, or any other day; and if you are few or many, you can have a happy day in the woods and fields, where you can gather the flowers and make wreaths and garlands, and enjoy all the beauty that nature provides. We can keep one part of the old May Day custom, just as the children in the picture are doing, by having a day in the open air when the winds are softest, the birds sing their sweetest, and the flowers have a delicate beauty that belongs to the flowers of no other season. Yes—let us have a "May Day," but it need not be on the first, or on any other special day in May, and you can be quite as happy in June.

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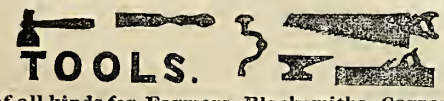

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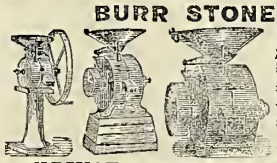

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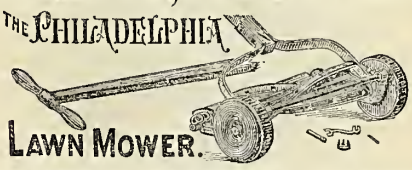

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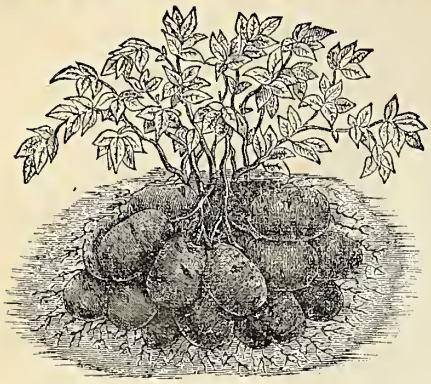

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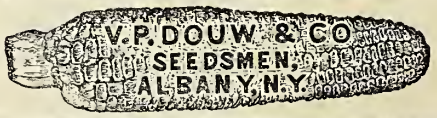

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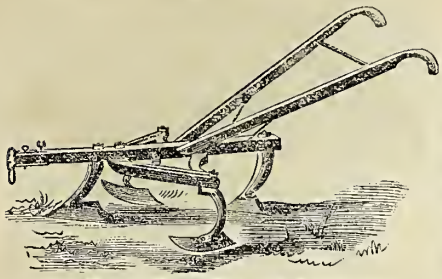

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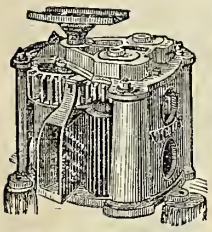

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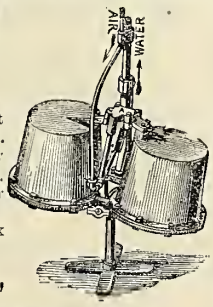

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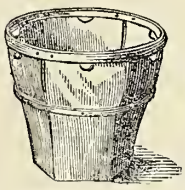

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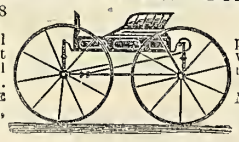

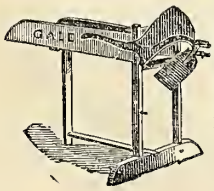
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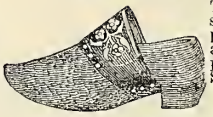
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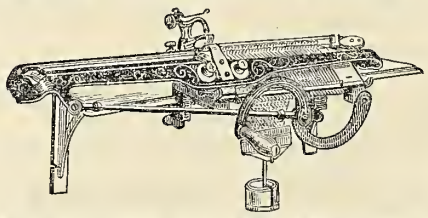
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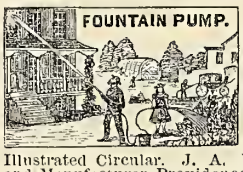

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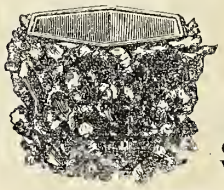
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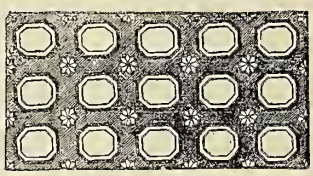

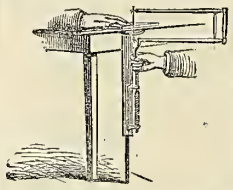
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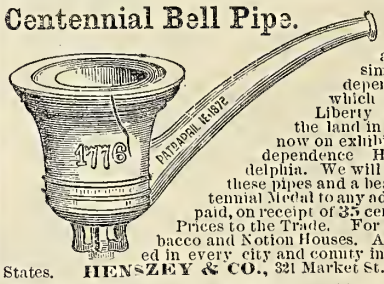

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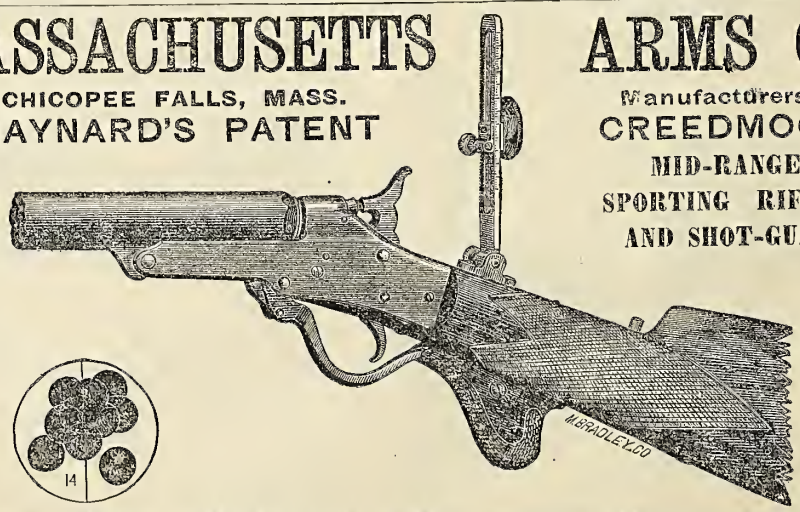

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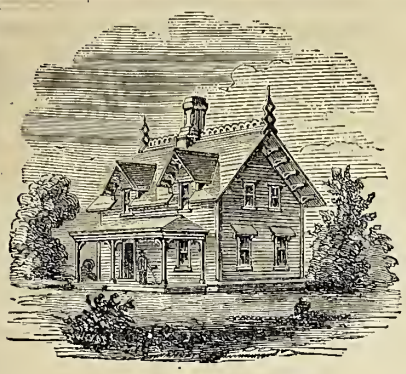

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The great "Centennial Toy." A fine old soldier in a brilliantly colored uniform, with cocked hat, staff, and flag, all put up in a neat box. The Hero is so constructed that he can be placed in almost numberless and amusing positions, and will delight the children everywhere.

Price 35 Cts.; *by mail, prepaid*, **45 Cts.**

CRANDALL'S ACROBATS.

Full of fun and frolic, and most brilliant in costume. These are among the most fascinating and ingenious toys ever invented. The number of figures which can be made with the pieces in a single box is limited only by the ingenuity of the operator.

Price $1.00; *by mail, prepaid*, **$1.25.**

CRANDALL'S MENAGERIE.

One of the most wonderful and amusing things ever brought out for the entertainment of children. The six animals composing the menagerie are beautifully painted, and so arranged into 56 pieces in each box, that tens of thousands of most laughter-provoking figures can be made up with them.

Price $2.00. [*Purchaser will pay express charges. Box too large to go safely by mail.*]

CRANDALL'S BUILDING-BLOCKS.

Can be made into forms of almost endless variety.

The blocks are put up in neat, strong boxes, and a large sheet giving various designs of buildings, etc., accompanies each box.

Price—No. 1, $2.00; *by mail, prepaid*, **$2.50.**
No. 3, $1.00; *by mail, prepaid*, **$1.25.**
No. 4, $1.00; *by mail, prepaid*, **$1.15.**

CRANDALL'S ILLUMINATED PICTORIAL ALPHABET CUBES.

These Cubes are gorgeously colored, and will make over 500 beautiful combinations or figures. They are water-proof, odorless, and durable; put up in handsome black walnut boxes; and are most attractive to both young and old—an elegant present for the little ones.

Price $2.50; *by mail, prepaid*, **$3.00.**

CRANDALL'S MASQUERADE-BLOCKS.

Making 300 different and beautiful Combinations of Pictures, which are in very brilliant colors. They are not injured by washing, do not wear out, and afford endless amusement.

Price $1.00; *by mail, prepaid*, **$1.20.**

CRANDALL'S EXPRESSION-BLOCKS.

With Letters on one side, Picture on the other. The Alphabet is the key to the picture which, when complete, represents the inventor in Dream Land. These Blocks are water-proof, and can be washed if soiled.

Price 50 Cts.; *by mail, prepaid*, **70 Cts.**

CRANDALL'S ALPHABET-BLOCKS.

Red, White, and Blue.

Tasteless, odorless, and water-proof. The letters are on red, white, and blue ground. All children are pleased with them.

Price 75 Cts.; *by mail, prepaid*, **$1.00.**

N.B.—*If postage is not remitted with the prices, as above, the blocks will be sent by express at purchaser's expense.*

Orders from the trade will be supplied on liberal terms.

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 167.

Use for Wood Ashes.—"G. A. G.," Fulton Co., Ill. Wood ashes and rotted sawdust might be spread upon grass, or upon land plowed for corn, oats, or potatoes, with advantage; 100 bushels or more per acre.

What is a "League" of Land?—"W. H. S.," Denver, Col. A "league" of land is not 9 square miles, or 3 miles square. This term "league," is not our measure of 3 miles, but a Mexican measure of surface, consisting of 5,000 *varas* square, or 4,428 acres. The term has been in use in reference to grants of land to settlers, who, if stock raisers, received for each family a "headright league," of the size mentioned. Farmers each received only a "labor" which was a tract of 1,000 *varas* square, or a little over 177 acres, and a twenty-fifth part of a league. The term is used to designate tracts in California or Texas, held under Mexican grants.

Value of Night-Soil.—"E. C.," Somerset Co., Pa. There is no question as to the value of night-soil as a fertilizer. The difficulty in the way of using it is the handling of it. Properly managed, it may be made no more offensive than barn-yard manure. It may be mixed with coal ashes, or earth and straw, so that it may be loaded on to a wagon. In many of the French and English towns this refuse matter is thus handled by the farmers without difficulty, and made into inoffensive composts for the market gardens near by.

Value of Livery Stable Manure.—"Reader," Summit Mills, Pa. At $1.25 for a 4-horse load, the manure from a livery stable is cheap enough. No farmer should hesitate to take all he can procure at that price, even should he have to borrow the money to buy it with. If well used, it should return three times that money back again at least.

The Main Grape.—"Subscriber." The owner of this vine claims that it is distinct; the leading pomologists of Massachusetts say that they are unable to see how it in any respect differs from the Concord grown in a favorable situation. Thinking the pomologists should know, we have not planted it, hence can give you no opinion of our own.

Why a Hen Stops Laying.—"D. N. K.," Minersville, Pa. There are many things that we do not know all about yet, and this is one of them. It is not certain that a hen can lay just so many eggs during her life, and no more, or that the ovaries each contain so many germs or ova, and when these are exhausted, that she will stop laying. The statement that the ovary of a hen contains not over 400 ova, is not true, for some hens that we know of, have laid over 800 eggs during their lives, and are laying yet, at the age of eight years. A well fed hen will lay more eggs than a starved one, and it is more probable that the ova are secreted according to circumstances, than that they are already in embryo in the animal, as soon as it is formed in the egg, as some think. We know also that hens stop laying in cold weather, *if exposed to the cold*, but not otherwise.

How to Get Good Help.—"C. R. S.," Iowa City. It is more difficult to keep good help than to get it, yet that may be done under certain circumstances. The only way to succeed in getting it, is to keep trying. Possibly a pretty sure way to find a man and wife, would be to make your wants and offer known through the advertising columns, where they would meet the notice of those who are seeking places.

Yellow Fat in a Hog.—"A. B. L.," Portage Co., Ohio. The fat of a healthy pig should be white, with no tinge of yellow. When the fat is yellow it is a proof that the liver has been disordered, and that bile has been mixed with the blood. It is supposed by some that this yellowness does not make the meat unwholesome, as in the case of sheep who have the liver-rot; in these the fat is very high colored, and they are in no way despised by the butchers on that account. It is remarkable that at the outset of such a bilious disorder, an animal will fatten rapidly, although the eyes may appear very yellow. We do not agree with the butchers in their estimation of yellow fat, and think it safest to reject it as food, but this may be a matter of fancy.

How often to Feed Cattle.—"C. H. B.," Lancaster Co., Pa. To fatten a steer in the shortest time, he should be fed frequently. Three times a day is not enough. Five times is better. A change of food, and small quantities given often, will fatten most rapidly. For instance, at five o'clock in the morning give hay and chopped roots; at eight some meal, and then a little hay left in the rack; at noon some chopped roots sprinkled with meal or oil-cake; at four P. M. some meal, and at night some chopped hay and roots, mixed with a little meal. If the whole day's rations are thus divided, it will be found that more food will be eaten, and digested, and turned into flesh and fat. An animal will fatten much better, if cleaned up in the morning, and not disturbed again, except to be fed and watered, until next morning.

To Get the Most out of Manure.—"C. G. P.," Washington Co., Ohio. As manure is not available as plant food until it is decomposed and dissolved, it should be so managed as to thoroughly rot it before it is used, if one would get the full benefit at once. Straw and corn stalks are not manure, but when mingled with fermenting droppings from animals, they soon become available. To decompose the rougher portions of the manure heap as quickly as possible, it is best to turn it over and expose it to the atmosphere, and keep it moist, so that a continual heat may be preserved.

"Hooks" in a Cow's Eyes.—"J. R. C.," Jewell Co., Kansas. The membrane at the inner corner of a cow's eye, which is called the "haw," serves to sweep away from the surface of the eyeball any dirt or foreign matters which may lodge upon it. It is a cartilaginous or gristly substance, and is embedded in fat which surrounds the back of the eyeball. It sometimes becomes inflamed and swollen, and is then supposed to be something which should not be there, and a symptom of a disease which is called the "hooks." Sometimes people cut out these swollen parts, to get rid of them, instead of reducing the inflammation by cooling washes and medicine. When removed, the inflammation spreads to the contiguous parts, which swell and sometimes force the eye out of the socket. The pain and distress of the animal are great, and rapidly reduce its condition, as in your case. It is difficult to advise without knowing exactly how the case appears. It can do no harm, however, to bathe the eye very frequently in a mixture of four ounces of laudanum in a quart of soft water, and hang a cloth soaked in the liquid so that it covers the eye. The cow should be kept in a dark place, and fed on slops. Half a pound or more of Epsom salts, with half a dram of calomel might also be given. If possible the advice of a surgeon should be procured as to further treatment.

To Cure a Self-Sucking Cow.—"C. J. B.," Rensselaer, Ind., says a cow may be prevented from sucking herself by placing a pair of jointed bridle bits in her mouth upon a head stall which passes over her head between the ears and horns. The bits do not prevent the cow from eating, but keep her from sucking. An improvement on the above is to use hollow bits which are perforated with holes, so that when the cow tries to suck, her mouth is at once filled with air, which passes through the bits.

Cranberry Growers—The N. J. Association.—We were unable to be present at the annual meeting of this Society in January last, but learn that it was well attended and very satisfactory. The association now numbers 107 members, and has for its object the development of the cranberry culture, the extension of the trade in the fruit, and the securing of uniform packages. We learn from a report by Mr. N. R. French, one of the Executive Committee, that there are now in N. J. 5,000 acres in cranberries, costing at three years old, $1,750,000, and that there are in the whole country 15,000 acres, representing an investment of $4,375,000. The yield for the past four years is given in the following table:

	1872. *Bush.*	1873. *Bush.*	1874. *Bush.*	1875. *Bush.*
Cape Cod and adjacent Islands	20,000	80,000	70,000	50,000
Mass., R. I. and Conn.	20,000	25,000	35,000	25,000
New Jersey	100,000	110,000	90,000	90,000
Wis., Minn., Ind. and Mich.	135,000	60,000	50,000	40,000
New York			5,000	5,000
Totals	275,000	275,000	250,000	210,000

Insects, rot, scald and other diseases are the causes of the diminished yield. A year or more ago there was a great flourish of trumpets over some one from the Department of Agriculture at Washington, who had discovered the fungus which caused the rot, and had given the remedy. At last, we thought, that wonderful Department has gone and done something; the idea was so novel that we did not toot the trumpet of praise, but waited to see if so astonishing a thing could be true. We did well to wait, as we see by the report of this meeting, that the prescribed cure for the rot—lime—has been faithfully and abundantly applied, but the rot has been *worse than ever*. So the Department relapses into its normal condition. The attempt to introduce the cranberry into England and the continent promises well. The "Fruit Growers' Trade Co." put up the berries ready for the table in handsome quart jars, which meet with a ready sale abroad, where they are just learning that the American cranberry is vastly superior to their own. The President of the Association is Rev. J. H. Brakeley, Bordentown; Secretary and Treasurer, A. J. Rider, Trenton.

Mere Mention.—Our crowded space forbids us to do hardly more with the following than to acknowledge their receipt, and give thanks for them:

IOWA STATE AGRICULTURAL COLLEGE.—The report of the Board of Trustees to the Governor of Iowa, for 1874-'75. Some of the experiments here enumerated strike us as hardly worthy the name. For instance, one "to test the relative merits of mellowed and unmellowed soil for early flower seeds." An experiment "to test how many inches make a foot," could hardly be less needed."

THE ROYAL MUSEUM OF NATURAL HISTORY, at Florence, Italy, a report on the botanical department of the Museum, including the garden, by Prof. P. Parlatore, is full of interest and well illustrated.

PENNSYLVANIA FRUIT GROWERS' ASSOCIATION.—The report for 1875, like all previous reports of this very practical society, is of real value.

THE FLORIDA FRUIT GROWERS' CONVENTION publish their proceedings, which are of value to all intending to engage in fruit culture in that state. Published at the office of "The Florida Agriculturist," Jacksonville.

OHIO STATE HORTICULTURAL SOCIETY.—A report of the annual and other meetings held in 1875. Full of good matter. M. B. Bateham, Painesville, is Secretary.

WESTERN N. Y. HORTICULTURAL SOCIETY.—We have already noticed the meeting held in January last, and now promptly have the full report in a pamphlet form.

THE POUGHKEEPSIE (N. Y.) SOCIETY OF NATURAL SCIENCES in its first number of "Proceedings" has a fully illustrated article on the minute fungi, which form the mildews, or white blights, by W. R. Gerard.

INDIANA HORTICULTURAL SOCIETY publishes with its "Transactions" a table of fruits suited to the state, and several essays.

Catalogues Received.

NURSERYMEN.

J. W. ADAMS, Springfield, Mass. A wholesale list of fruit and ornamental trees.

P. J. BERCKMANS, Augusta, Ga. A very full stock, and especially rich in varieties, adapted to the southern states.

BUSH, SON & MEISSNER, Bushburg, Mo. A classified price-list of a most extensive variety of grapes. Their Illustrated Descriptive Catalogue, published last year, is the most valuable of recent contributions to the literature of the vine.

CALKINS & BROOKS, Bricksburg, N. J. Wholesale price-list of fruit and ornamental trees.

D. E. HOXIE, Northampton, Mass. Special strawberry catalogue.

ISAAC HICKS & SONS, Old Westbury, L. I., N. Y. A catalogue of fruit and ornamental trees that have been tested on Long Island.

F. M. HEXAMER, (Successor to Reisig & Hexamer), Newcastle, Westchester Co., N. Y. Small fruits in great variety, and an immense collection of potatoes.

W. H. LEWIS, Winterset, Iowa, offers greenhouse plants in addition to nursery stock.

MCARTHUR, SON & CO., Tamola Nurseries, Meredian, Miss. Besides trees, has sweet potatoes and other plants.

AMOS MILLER, Carlisle, Pa. Catalogue of strawberries, including several new seedlings.

WILLIAM H. MOON, Morrisville, Pa. Nursery and greenhouse stock.

WILLIAM PARRY, Pomona Nursery, Cinnaminson, N. J. Small fruits a specialty, besides which the leading fruit and ornamental trees.

RAKESTRAW & PYLE, Willow Dale, Chester Co., Pa. Wholesale list of nursery stock. The Duelling Cherry as a specialty.

A. M. SMITH, Drummondville, Ont., makes a specialty of the New Dominion Strawberry.

D. B. WIER, Lacon, Ill., sends special catalogue of evergreens. Among his specialties are the Birkett Pear, and the genuine Wild Goose Plum, many trees sold for this variety being spurious.

SEEDSMEN.

D. A. COMPTON, Hawley, Wayne Co., Pa. Catalogue of seed potatoes, new and old.

KING & SAVAGE, Chicago, Ill., besides seeds, have a large stock of rustic work, etc.

J. R. & A. MURDOCK, Pittsburgh, Pa. Vegetable and flower seeds, and garden implements.

J. M. PHILIPS, Sylvan, Franklin Co., Pa., grows seeds and offers nursery stock also.

ROBT. C. REEVES, 185 & 187 Water St., N. Y. A general seed catalogue. Also deals in agricultural implements, small fruits, etc.

J. C. ROOT, Rockford, Ill., whose seed catalogue has already been noticed, sends his Garden Manual for March, which contains much useful matter, and offers a great variety of vegetable plants, with a novelty in the way of $1 collections of these for family gardens, sent by mail.

FLORISTS.

B. P. CRITCHELL, Cincinnati, O., combines the seed business with that of florist, and sends a neat catalogue.

HOOPES BRO. & THOMAS, Westchester, Pa., issue a special illustrated catalogue of their collection of Alpine and Hardy Plants, which is very full of plants which people should know better and cultivate more.

TYRA MONTGOMERY, Mattoon, Ill., puts up "Centennial collections" of plants, at very low rates.

J. R. & A. MURDOCK, Pittsburgh, issue a separate catalogue for their greenhouse stock.

GEO. W. PENNEY, Newark, O. A neat catalogue, and well provided with novelties.

CHAS. T. STARR, Avondale, Pa. General assortment of greenhouse and vegetable plants.

JOHN SAUL, Washington, D. C. In mentioning this establishment last month, we should have stated that it is accompanied by a colored plate of the new deep crimson tea rose, Duchess of Edinburgh. An excellent rose, and a very fine picture of it.

VANDERBILT BROTHERS, 23 Fulton St., N. Y., besides their seed and implement catalogue, have a special list of greenhouse plants, and nursery stock, including the new Cuthbert raspberry.

A. WALDIE, Titusville, Pa., has a general collection, including novelties.

H. W. WILLIAMS & SONS, Batavia, Ill. A neat illustrated plant catalogue, with a supplement for seed potatoes.

WM. C. WILSON, 45 W. 14th St., New York, and Astoria, L. I., has one of the largest establishments in the country, and his catalogue is sure to present a stock of novelties.

MISCELLANEOUS.

BEECHER BASKET CO., Westville, Conn., the well-known Beecher fruit baskets, which are also kept at Wyoming, Del.

COLBY & CO., Benton Harbor, Mich., make the baskets illustrated in November last, and other fruit packages.

THOS. JACKSON, Portland, Me. Weeding implements.

W. W. RATHBONE, Marietta, O., offers sweet potatoes for seed, and also the plants.

C. M. MOSEMAN & BRO., of 114 Chambers St., New York, issue a Descriptive Price List of Harness and Horse Furnishing Materials, copiously illustrated, which, together with many portraits and biographical sketches of noted horses, is sent, post-paid, to any applicant for 50c.

EUROPEAN CATALOGUES.

HYPPOLITE JAMAIN, Rue de Glaciere, No. 217, Paris, sends a long list of new roses.

CH. HUBER & CO., Hyeres (Var.). France. Seeds of new plants, Cannas, and other novelties. Catalogue in English. A. Bolker & Sons, New York, agents.

J. C. SCHMIDT, Erfurt, Prussia, offers living plants, but mainly in dried flowers, grasses, mosses, etc. These seem like trivial affairs, yet the trade in them is large; a sheet of engravings shows that an immense range of buildings is required for the work.

IMPLEMENTS.

ADRIANCE, PLATT & CO., Poughkeepsie, N. Y., and New York City, No. 165 Greenwich St., manufacturers of the well known Buckeye Mowers and Reapers.

R. H. ALLEN & CO., 189 & 191 Water St., N. Y. A special descriptive illustrated catalogue of the flour and grain mills made by them.

THE JOHNSTON HARVESTER CO., Brockport, N. Y., manufacturers of Reapers and Mowers.

THE AUTOMATIC CORN PLANTER, made by the Welles Specialty Works, Chicago, Ill. This is affixed to the foot, and drops and covers the seed as fast as a man can walk.

HARRISON'S BURR STONE FARM MILLS CO., New Haven, Conn. These mills are adapted for farm use, and horse-power. A 12-inch mill, weight 200 lbs., grinds ten bushels of coarse meal in an hour.

WARD B. SNYDER, 84 Fulton St., New York. The Little Giant steam engine, from one to three horse-power.

SKINNER & WOOD, Erie, Pa. Skinner's Portable Engine.

RUMSEY & CO., Seneca Falls, N. Y. Pumps and Fire Engines.

POULTRY.

A. MERRIL, Meadville, Pa., sends a catalogue of the French Creek Poultry Yards.

WM. B. WONDERLY, Dayton, Ohio, breeds Light Brahmas only.

JAMES E. SISSON, Westerly, Rhode Island. Pekin Ducks, Games, and White Guinea Fowls.

FERTILIZERS.

THE COST, PER POUND, OF AMMONIA, PHOSPHORIC ACID, AND POTASH, in various fertilizing materials. A table published by Chas. V. Mapes, 160 Front St., New York, gives valuable information to those who wish to compound their own fertilizers, or experiment with them.

NEW IDEAS ON FERTILIZATION, is a pamphlet issued by Vanderbilt Bros., 23 Fulton St., New York, and contains quotations from the works of eminent Agricultural chemists, in regard to the use of chemical fertilizers.

"THE STOCKBRIDGE FERTILIZERS," from W. H. Bowker & Co., 43 Chatham St., Boston, contains Prof. Stockbridge's formulas for compounding artificial fertilizers for various crops.

LANDS AND FARMS.

THE BLUE RIDGE HIGHLANDS, of western North Carolina, by S. T. Kelsey, of Highlands, Macon Co., N. C., describes the advantage of that country, its pleasant and healthful climate, and its cheap and fertile lands.

Crude Petroleum for Paint.—"D. O. B.," Boston. Having used crude petroleum for covering the woodwork of tools, as well as for coating the boards and roof of a hay shed, with great advantage, we have recommended its use for such purposes as these. We have seen numerous buildings coated with this oil, and know several others who have used it with success. We cannot therefore understand the reason of your unsuccess, unless it be that something else than the crude oil was used. If you are satisfied that the oil in your case "will not dry in 40,000 years," there is certainly some mistake. As a further test, we recently had an experiment made in which, after three days, the oil was dry, and a coat of ordinary paint was laid over it, with an equally good effect as from the use of any other priming material. The color left upon boards by crude petroleum is a sort of brown, which is, although of a muddy appearance, not at all disagreeable.

How to Feed Rye.—"W. H. C.," White Co., Ga. If the rye is fed green, it is only necessary to mow it, and give it to the horses and mules as other green feed is given. If fed when ripe and dry, the beard will not hurt horses or mules, but if fed to sheep or cows the sharp beards *sometimes* will pack in the honey-comb recesses or the leaves (many plies) of the stomachs, and cause mischief. It is best therefore not to feed rye or other bearded straw to ruminants.

Cure of Hog Cholera.—"A. H. B.," Brownsville, Tenn., sends the following remedy for hog cholera, viz., to give one tablespoonful of soda in some meal each day, until relieved. To this we would add the suggestion that if this fails of effect, half a tablespoonful of SULPHITE of soda might be given in a similar manner, daily. Hog cholera is the effect of a blood poison, and an effective antiseptic would be useful.

Night-Soil for a Fertilizer.—"E. C.," Somerset Co., Pa. There is no question that night-soil, as we term the contents of privies, is valuable. The term was applied, because the emptying of the cesspools in England is done in the night, and the name was introduced here. Very little night-soil is wasted in Europe, except in the larger cities, where it runs off by the sewers. Where cesspools are used, the "soil" is dipped out with long-handled scoops into tight barrows, and carried to a heap, where it is mixed with coal-ashes and straw, and is finally loaded into tight cart or wagon bodies, and taken to market gardens for manure. It is generally used for the onion crop, or upon farms for the root crops. As to its relative value as compared with livery-stable manure, we would rather take the latter at $1.25 per four-horse load, than the first for nothing, on account of the difficulty of handling it, or of procuring men who are willing to work with it in a country town.

Catarrh in Sheep.—"C. J.," Rockbridge Co., Va. When a sheep's nose is gummed up with mucus, it is a symptom of cold or some other affection of the breathing passages, and not of "grub in the head." The proper remedy is to see that the sheep are not too warm in their sheds, and that their yards are not damp. Also to sponge their noses with vinegar and water, squeezing considerable of it up their nostrils, and then freely tar their noses with common pine tar.

Which is the Best Potato Fertilizer?—"G. W. B., Phœnix, R. I. For potatoes, superphosphate of lime from bones, and potash, are both valuable fertilizers, but they are very different from each other in composition, and cannot be compared together. Wood ashes contain potash and some phosphates, and are very useful for potatoes, producing a very sound and clean crop. Superphosphate of lime also produces sound and clean tubers. 250 lbs. of superphosphate, or 50 to 100 bushels of wood ashes, or 400 lbs. of best quality German potash salts, free from magnesia, may be used for an acre. Soda ash is of little value as a fertilizer.

Jersey Cows in Iowa.—"J. C. McL.," Plymouth, Iowa. The Jersey cow will thrive very well in Iowa, there are many herds in that state. A good bull calf may often be purchased for $50.

Mutilating Trees.—The Legislature of New York enacted, in 1875, as follows: "It shall be unlawful for any person or persons whatsoever, in this state, to hitch any horse or other animal to, or leave the same standing near enough to injure any fruit or forest tree that has been transplanted or used as a shade or ornamental tree around any school house, church, or public building, or along any public highway." The penalty is a fine, not exceeding $10—and costs.

Cost of growing Corn in Virginia. "G. G. P.," White Sulphur Springs, W. Va., gives the following items of the cost of producing and harvesting corn in Virginia. Labor is valued at $1 per day, 50c. for a boy, and the same for a horse. The items are as follows:

Plowing	per acre	$2.00
Grubbing and harrowing		.87
Planting with machine		.20
Seed corn		.09
Working, cleaning and thinning		2.16
Cutting		.67
Shucking		1.45½
Bringing in corn and cribbing		.83
Bringing in fodder and stacking		.59½
Expenses per acre		$8.87

Insurance on Farm Property.—Statistics, compiled from the books of 10 Insurance Companies, show that these have paid, during the year ending Oct. 1st, 1875, losses on farm property in the State of New York alone, to the amount of $471,871.24, a great increase over former years. The inference is, that farm buildings and other property, which have been taken at low rates of insurance, are very risky. The increase of fires is attributed to the use of kerosene, carelessness with matches, and the unusual number of tramps. This sum represents the amount of insurance that has been paid, and not the actual losses, which would be much greater, as farmers are seldom fully insured.

Sweet Potatoes, Seed and Plants.—Much mischief is sometimes made by types; it rarely happens among our advertisements, though in a recent case the types got out of place in an annoying manner, and made Mr. W. W. Rathbone, of Marietta, Ohio, say that he sold seed sweet potatoes at $3, instead of $6, a barrel. Mr. R. has 25 acres in sweet potatoes, and offers both seeds and plants of all the leading varieties.

Lily of the Valley.—It has been found that, while the roots, or "pips," imported from Germany, produce the regular, old-fashioned Lily of the Valley flowers, that those from Holland are of a different strain, if not variety; in these the flower-stem is much taller, the flowers smaller, and while the lower bells are well opened, those at the top are only half developed and greenish. A recent Gardener's Chronicle (London) figures both kinds as received from Mr. Herbert, of Richmond. May not this explain why so many of our florists meet with unsatisfactory results in forcing this plant? It is worth considering.

Mixing Fish Guano with Superphosphate.—"G. W. B.," Phœnix, R. I. It would probably be better to mix fish guano, if it is dry, at $14 a ton, with reduced bones, than night soil at $2.50 a load. The night soil contains much water, and its nitrogen is not so largely in the form of ammonia as that of the fish guano. It would do very well to dry the bones after treatment with the acid with sifted coal-ashes. Only so much as will reduce it to a dry powder should be used. Clean, pure sand, free from lime, or charcoal powder, would be preferable to the ashes, which may contain a little lime, which is injurious to the superphosphate.

The Cause of Bitter Milk.—"J. L. L. M.," Berks Co., Pa. When a cow nears her period of calving, the quality of the milk undergoes a change, and it is frequently bitter. There is no help for it but to let the cow go dry. But sometimes there are other causes for the change, and a pinch of saltpeter or a spoonful of salt put into each pail of milk may remove the bitterness. Sometimes the cow may be out of health, and the blood is charged with bile. Then the eyes appear yellow and the milk is of a yellowish-green tinge, and the bile may cause the milk to taste bitter. If such is the case, a dose of salts (8 ounces) with an ounce of ginger given to the cow may remove the trouble.

Whitewash for Poultry-Houses.—"Reader." The most readily made whitewash is a simple mixture of two pecks of lime to half-a-barrel of water. The water should be added very gradually to the lime. If too much water is used in slacking the lime, the wash will be gritty and lumpy. This should be used when fresh made.

Agriculture, Horticulture, Arboriculture, and Botany at Harvard University.—Very few have an idea of the scope of Harvard. It is a *university* in the true sense of the word, and has in all its departments nearly 1,200 students. Aside from the academical, law, medical, and other departments, it has of late years developed strongly in the direction of those branches kindred to agriculture. We learn from the reports of these departments embodied in the general annual report of President Elliott, that the classes in Botany at the Botanic garden, under Prof. Goodale, with Prof. Gray at hand to encourage, have been well attended by students of both sexes, mainly teachers. The Botanic garden is constantly increasing in value under Prof. C. S. Sargent, the director. The Bussey Institution is the agricultural department of Harvard, and Prof. F. Storer is its Dean; the Bulletins of the Institution, distributed to those interested in scientific agriculture (and they would be of no use to others), have taken high rank with similar publications. Prof. S. holds strong ground against "manual labor" in an agricultural school, and says that until the opinion that this is necessary "has been outgrown, as it has been in Europe, we can hardly look for any very rapid progress in scientific agriculture in America."

In the "Arnold Arboretum," which is upon the Bussey grounds, and under the direction of Prof. Sargent, much preparatory work has been done towards making it what its liberal donor intended, the great arboretum of America. The Bussey is the only place in the country where instruction may be had in the lower forms of plants, the minute fungi, algæ, etc. These specialties are under the able superintendence of Prof. W. E. Farlow. Chemistry, engineering, geology, zoölogy, and all other studies which bear upon agriculture are fully provided for at Harvard.

Periods of Gestation and Incubation.—"M. G.," Worcester, Mass. The periods of gestation and incubation of the most common of our domestic animals are as follows:

	Average.	*Known limits.*
Mare	340 days.	
Cow	280 "	260 to 300
Ewe	150 "	144 to 153
Goat	150 "	unknown
Sow	122 "	101 to 123
Dog	63 "	59 to 67
Rabbit	30 "	unknown
Turkey	30 "	26 to 32
Hen	21 "	18 to 24
Swan	35 "	35 to 42
Goose	30 "	28 to 34
Duck	28 "	24 to 30
Pea hen	28 "	27 to 29
Pigeon	16 "	15 to 17

Family Cows.—In choosing a cow for family use, most people would look for a large production of rich milk as the first consideration, and beauty as a secondary one, but an animal in which both beauty and usefulness are combined, is the most desirable. Thus, a handsome, pure bred Jersey cow, or even a high grade cow of this blood, makes the choicest family cow, and many such exist which are heavy milkers and butter makers, and at the same time possess all the desirable and fashionable marks and color. A good cow may be of any color, for the milking properties do not depend upon the color of the hair. In the herd of Mr. Thomas Fitch, of New London, Conn., there are many choice cows which have been bred especially for their milking qualities, and few herds, if any, in the country surpass this for beauty.

Value of Refuse Salt.—"Richmond," Va. The refuse salt from fish barrels and that from tanneries, where it has been gathered from salted hides, is worth but little more than the common coarse salt, used as a fertilizer. There is some little ammonia resulting from the animal matter absorbed by the salt or adhering to it, but that is of very little account. Ten cents per bushel would be a fair price for it. The most profitable manner of using it, would be to compost it with swamp muck, ditch mud, sods, and other vegetable matter, along with coarse manure.

Kerosene for Lice.—"L.," Yadkinsville, N. C. Kerosene oil should not be used unmixed as a remedy for lice. To use a gill per day, for four successive days, upon one cow, would be injurious, although it is not probable that it would be immediately fatal. Kerosene, properly applied, is a good remedy for lice, but to use it recklessly is dangerous. It should be mixed with four times as much lard, and rubbed in well on the places where the lice gather, chiefly along the spine. In your case the oil *may have been* absorbed through the skin, and caused the death of the cow.

Manuring Corn.—"M. H. L.," Yadkin Co., N. C. In applying manure for corn in the furrow, it is necessary to be guided by the supply at hand. An ordinary forkfull shaken along the drill, over one yard in length, will use up about ten tons per acre, and this makes a very fair dressing, although we have used twice this quantity without thinking we had too much. To use it in the drill in this way, makes the manure cover more ground than scattering it broadcast.

Water in Milk.—"C. T. S.," New York. No addition of water is needed to enable milk to be transported safely for any distance, either in cold or warm weather. In warm weather the milk should be cooled before it is sent on its journey, and this is sometimes done by putting a piece of ice into the can, as being the most convenient. This, however, is an adulteration, and should not be practised. If the cans are kept for a time in a cool spring house, the milk will be sufficiently cooled.

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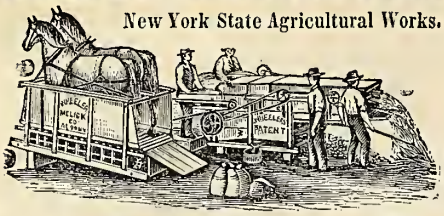
New York State Agricultural Works.



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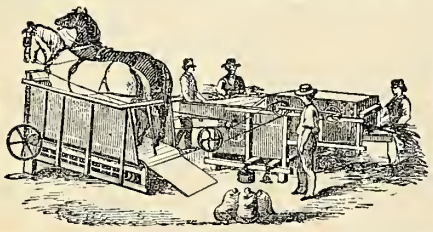
1854.  1876.

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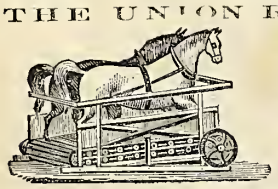

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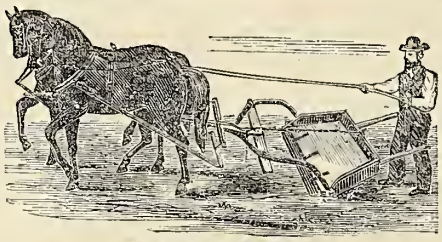

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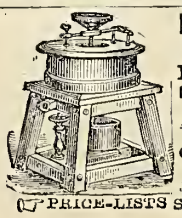

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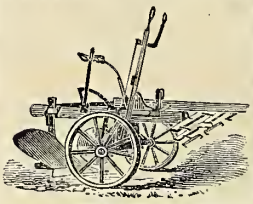

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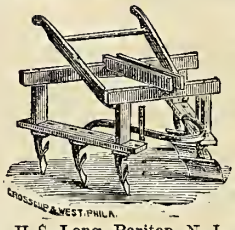

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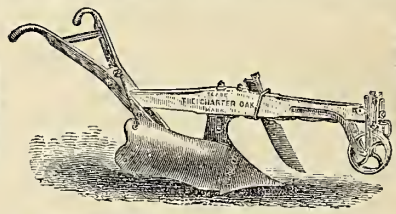
SOLE  MF'RS.

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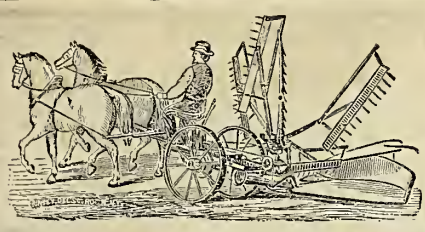

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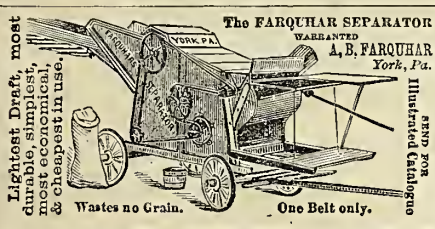

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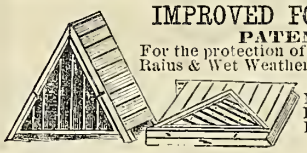

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Maine Insane Hospital, Augusta, Me., Jan. 14th, 1876.
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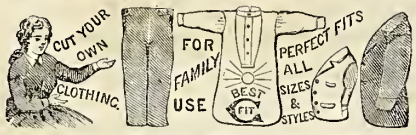

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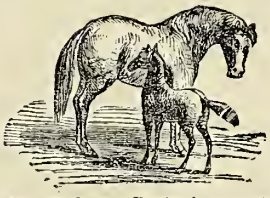

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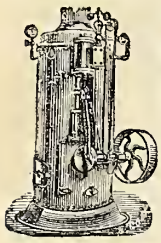

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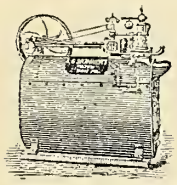

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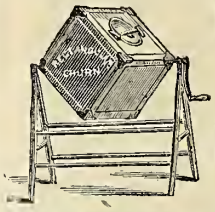

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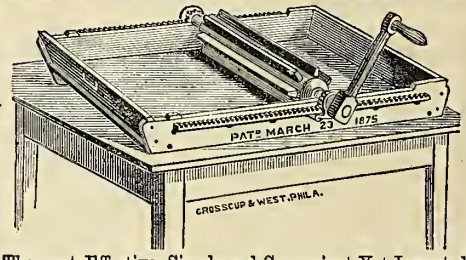

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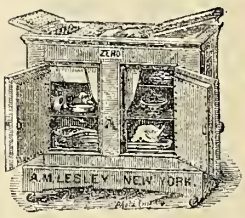

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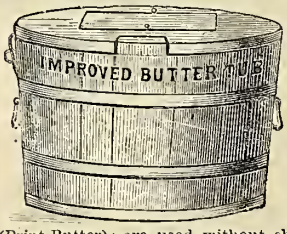

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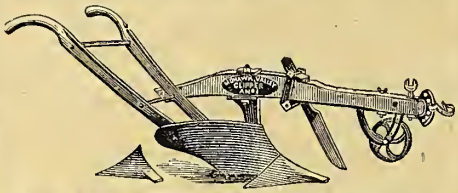

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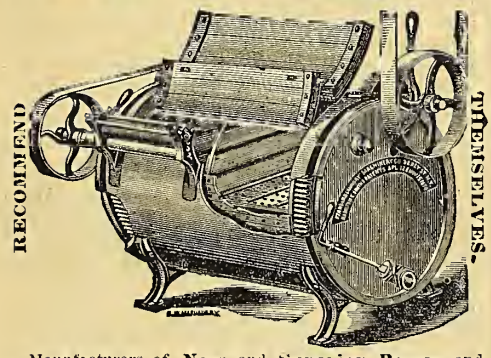

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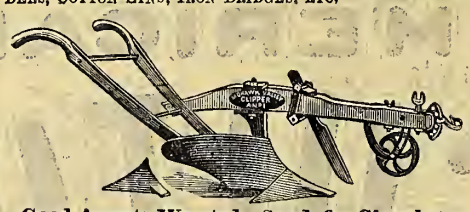

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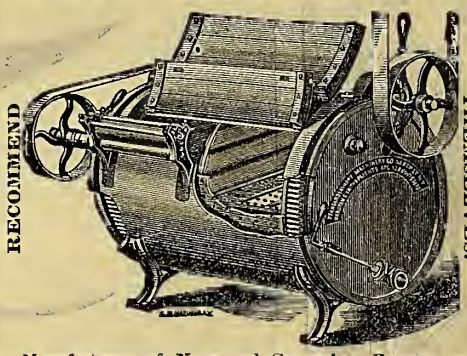

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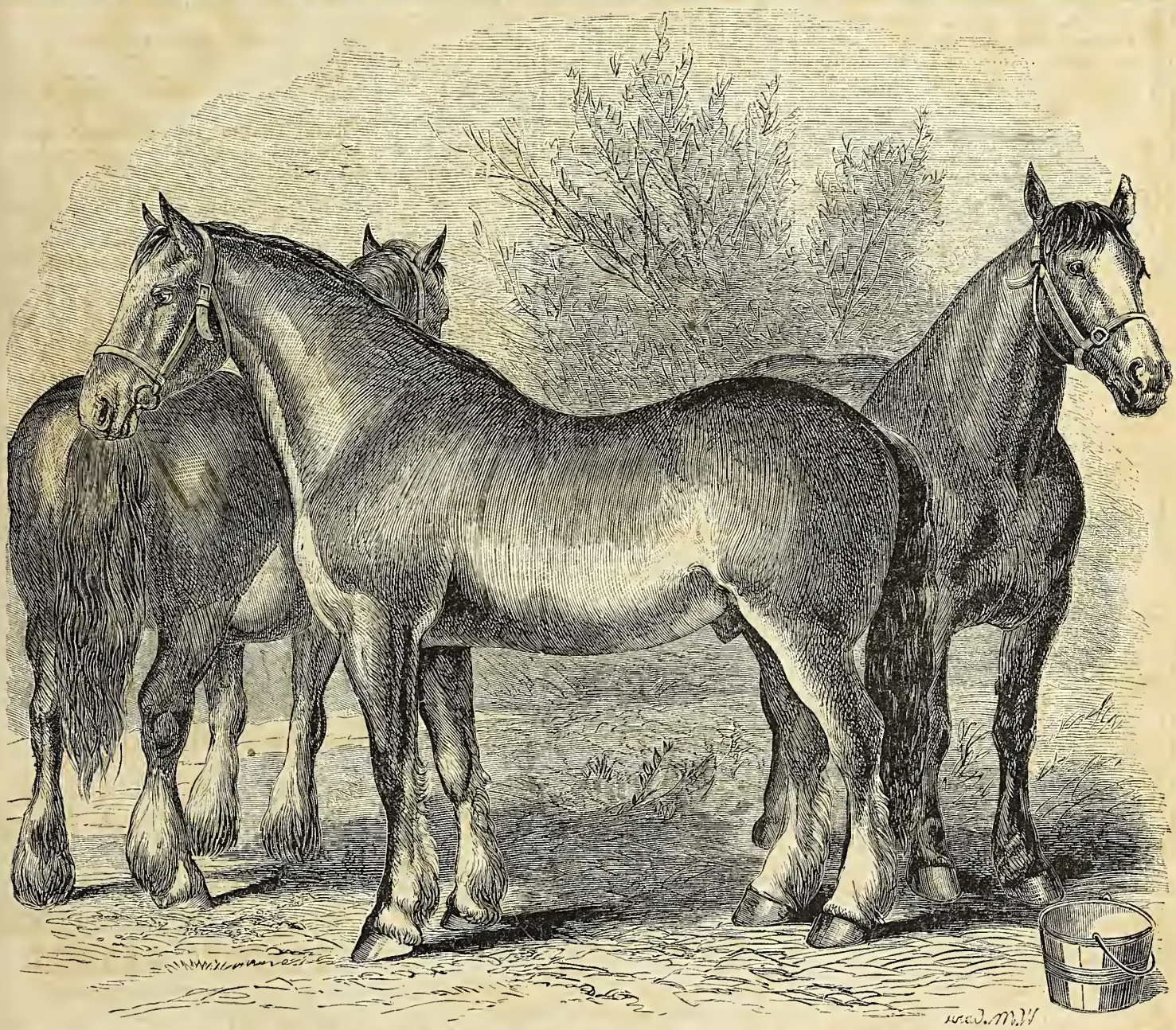

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Three-Horse Teams.—"J. R. D.," Ferrisburg, Vt. For a three-horse team there must be a pair of shafts for the middle horse; there is a difficulty in using three horses with a single tongue. The shafts may be used as an ordinary pair, or as two separate tongues. Pole straps may be used as well as breast yokes.

Calendar for June.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon sets.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	T	4 26	7 30	1 31	4 32	7 24	1 31	4 37	7 19	1 32
2	F	4 2[illegible]	7 31	1 51	4 31	7 25	1 53	4 37	7 19	1 55
3	S	4 25	7 32	2 11	4 31	7 26	2 15	4 36	7 20	2 19
4	S	4 24	7 32	2 37	4 30	7 26	2 41	4 36	7 20	2 46
5	M	4 24	7 33	3 4	4 30	7 27	3 10	4 36	7 21	3 16
6	T	4 23	7 33	rises	4 29	7 27	rises	4 35	7 21	rises
7	W	4 23	7 34	8 47	4 29	7 28	8 39	4 35	7 22	8 31
8	T	4 23	7 35	9 34	4 29	7 29	9 27	4 35	7 23	9 19
9	F	4 22	7 35	10 17	4 28	7 29	10 18	4 34	7 23	10 4
10	S	4 22	7 36	10 43	4 28	7 30	10 42	4 34	7 24	10 32
11	S	4 22	7 36	10 59	4 28	7 30	10 56	4 34	7 24	10 51
12	M	4 22	7 37	11 32	4 28	7 31	11 29	4 34	7 25	11 26
13	T	4 22	7 37	11 53	4 28	7 31	11 51	4 34	7 25	11 49
14	W	4 22	7 38	morn	4 28	7 32	morn	4 34	7 26	morn
15	T	4 22	7 38	0 12	4 28	7 32	0 11	4 34	7 26	0 11
16	F	4 22	7 38	0 33	4 28	7 32	0 34	4 34	7 26	0 34
17	S	4 22	7 39	0 54	4 28	7 33	0 56	4 34	7 27	0 59
18	S	4 22	7 39	1 23	4 28	7 33	1 26	4 34	7 27	1 30
19	M	4 22	7 39	1 56	4 28	7 33	2 1	4 34	7 27	2 7
20	T	4 22	7 39	2 39	4 28	7 33	2 45	4 34	7 27	2 52
21	W	4 23	7 39	sets	4 29	7 34	sets	4 35	7 28	sets.
22	T	4 23	7 39	9 1	4 29	7 34	8 54	4 35	7 28	8 47
23	F	4 23	7 40	9 45	4 29	7 34	9 39	4 35	7 28	9 34
24	S	4 23	7 40	10 21	4 29	7 34	10 17	4 35	7 28	10 13
25	S	4 23	7 40	10 50	4 29	7 34	10 48	4 35	7 29	10 45
26	M	4 23	7 40	11 14	4 29	7 35	11 13	4 35	7 29	11 12
27	T	4 24	7 40	11 35	4 30	7 35	11 35	4 36	7 29	11 36
28	W	4 24	7 40	11 55	4 30	7 35	11 57	4 36	7 29	11 58
29	T	4 24	7 40	morn	4 30	7 35	morn	4 36	7 29	morn
30	F	4 25	7 40	0 18	4 30	7 35	0 20	4 37	7 29	0 23

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
Full M'n	6	7 53 ev.	7 41 ev.	7 29 ev.	7 17 ev.	6 27 ev.
3d Quart.	14	10 30 ev.	10 18 ev.	10 6 ev.	9 54 ev.	9 24 ev.
New M'n	21	5 33 ev.	5 21 ev.	5 9 ev.	4 57 ev.	4 27 ev.
1st Quart	28	10 30 mo.	10 18 mo.	10 6 mo	9 51 mo.	9 24 mo.

AMERICAN AGRICULTURIST.

NEW YORK, JUNE, 1876.

After an open winter we have had a late spring. Both are trying to wheat, and the promise of this crop is not equal to an average, excepting in some of the Western States, where it has never been excelled. But it is not the simple fact of a damaged crop that we would particularly notice here, but that *it is the unskillful farmer who suffers most from unfavorable seasons.* This is especially apparent in the present condition of the wheat fields. Where the wheat was drilled in, it is in far better plight than where sown broadcast; on drained soils it has been the least winter-killed, and it is in the worst condition where it was sown both broadcast and late. Now that we have to compete in the English wheat market with the Russian farmer, who, since his emancipation from serfdom, is rapidly improving, with the Australian, and the Hindoo farmers of the East Indies, who now send their wheat to England for sale, we cannot live upon half crops. Either we must farm in the best manner, or we shall grow poorer every year. Our only hope is in larger crops; as to higher prices, nothing but a deficient supply will be likely to cause them, and the sources of supply are now so extensive, that a general deficiency will be unlikely to occur. In the course of improvement and the cheapening of products, farming cannot fall behind other industries and prosper, and unless every mechanical help and improved method is made use of, it will fall behind and become the poorest business in existence.

Hints about Work.

Corn.—Early varieties may still be planted. We have had an excellent yield of the Early Canada corn, planted as late as the 21st of this month. This is an eight-rowed yellow corn that, although small, may be made to yield, upon good soil, 60 bushels of shelled corn per acre. It will stand close planting. The corn grower this month must cultivate and cultivate. The cold, backward spring has helped the weeds more than the corn, and a good crop can only be expected through thorough cultivation. To choose the proper implement is very important; a plow goes too deep, and injures the roots; while a cultivator that slips over the hard spots, only half does the work. The surface must be well worked and kept loose and mellow. As soon as the rows can be seen, cultivation should begin, and then the advantage of having the rows perfectly straight will be manifest, for in straight rows the cultivator can be spread so as to cut close to the plants by going once only in a row. Thorough and frequent use of the cultivator will save hand-labor; no farmer can afford to hand-hoe his corn crop now-a-days.

Potatoes.—Early planting almost assures a safe crop. By planting early, the crop will be out of the way of the second brood of the Colorado beetles. Although the price is very low, we would still plant potatoes. A farmer should always be independent of markets, and he may be so, to a great extent, by feeding what he cannot sell. Potatoes fed to pigs the past season, have been worth 50 cents a bushel, and although this is exceptional, on account of the high price of pork, it is rarely the case that 25 cents a bushel cannot be made out of potatoes by feeding them.

The Colorado Beetle is most to be dreaded when in the larva state. It then eats voraciously, and is very numerous, the perfect insect eats also, but there are not so many of them. The whole secret of safety is in being prepared for them, and not only brush them off the vines into the pan described in the *American Agriculturist* of September, 1875, but have Paris green in readiness for the larvæ. Small quantities should be hand-picked. It should be borne in mind that the larvæ of the Lady-bugs are useful, and not to be destroyed; they are long and narrow, very active, lead-colored, with bright spots, and quite unlike the larvæ of the Colorado beetle. The pupæ of the Lady-bug, attached to the vines, should also be spared; they have been mistaken for the larvæ of the Colorado insect, and many have picked them off; they are perfectly dormant. See Basket item on the use of Paris green.

Beans.—This is a crop that gives good profit when well managed. It is a poor plan to plant it upon ground that will grow nothing else. On good, clean land, a corn-stubble, or a newly plowed clover sod, beans should yield 25 to 30 bushels per acre. They yield best when drilled in rows 30 inches apart, and two to three inches apart in the rows, but we find this gives most work in pulling them. An Emery planter will drop and cover six acres a day with single beans, 3 inches apart, or 4 beans every 10 inches. The crop should be planted at least by the middle of the month.

Plaster.—Ground plaster (gypsum) is a cheap and valuable fertilizer for all the broad-leaved crops—corn, potatoes, beans, etc., as well as clover. For such it may be applied early this month, scattering a full handful around each plant or hill. Being soluble, (though slowly), it will be washed into the soil by rains. There is no reason why it should be scattered *upon* the leaves, as is so often recommended by some writers.

Roots.—Mangels, beets, or carrots may yet be sown, if not already in the ground. With roots, early sowing is of great advantage, and rich soil a necessity. In the absence of other manure, superphosphate of lime, or fine bone-flour, in the drill near the seed, is of great value for the above, as also for ruta-bagas and turnips. Ruta-bagas may be sown later in the month. As a preventive against the fly, or turnip or cabbage flea, some fresh lime, "dry-slacked," with water in which some carbolic acid has been dissolved, may be dusted over the plants. This may be done as quickly as a man can walk, and 5 or 6 acres may be dressed in a day. The English farmers soak the seed in tar-water, which, they say, saves the seed leaves from the flea. We have not tested this plan, but it may perhaps be worth a trial.

Weeds.—It is a good thing for a farmer not to be afraid of weeds. Some think and act as though they could not be killed. We *know* that they can be if properly managed. The secret is to start early and keep at them. Perseverance during the whole season is necessary. Harrowing the ground soon after the crops are planted, and again as soon as they are up, and then cultivate often, will nearly demolish them. Any that escape the implements should be hand-pulled.

Work Horses.—Nine hour's work in the field, now that we have so many labor-saving implements, is

enough for horse or man. Two hours rest at noon, will be well for the horses, giving them time to eat, and opportunity to digest their food. The tenth of the time thus taken from work, will be more than regained in the better health of the animals, and their better ability to work the other nine hours.

Working Oxen.—In feeding oxen, it must be remembered that they are ruminating animals, and need to be fed differently from horses. Having a large stomach, an ox needs coarse food to fill it. An ox, therefore, is not refreshed by a feed of fine meal; but is by one of cut hay or straw and meal mixed, and the noon feed for oxen should be of this kind. Give ample time for feeding and rest at the noon spell.

Cows and Calves.—Cows are now in their flush of milk, and it is the harvest time of the dairy. June butter is the best of the year; the fresh grass gives both rich color and the best flavor. To preserve these, every operation of the dairy should be done with scrupulous cleanliness. The quality of the feed should be looked to, for the quality of the milk depends upon it. The best calves should be retained and raised to make dairy cows, instead of sending them to the butcher.

Sheep and Lambs.—Lambs should be pushed forward by giving the ewes a little extra feed at night. A handful of mixed bran and crushed oats, daily, for each ewe, will greatly increase the milk, and help to rear hardy and large lambs. Guard against cold storms after shearing, and free the lambs from the ticks, which gather upon them, after the ewes are shorn, either by dipping or hand-picking. A boy or girl can soon clear a few lambs of ticks, by killing the insects with a pair of sharp-pointed scissors. Both the ticks and their eggs should be nipped with the points of the scissors.

Swine.—Allow pigs a run in a piece of clover, or an orchard. It would be good for the pigs, and prevent much damage from insects, if the orchard were kept as a pasture for swine, and managed so that there should always be some green crop in it for them to consume. Clover might be made to alternate with rye for this purpose. Spring pigs, intended for the butcher in the fall, should have as much grain, or boiled potatoes, as they will eat. There is nothing better for them than boiled potatoes, mixed with either corn or barley meal. Stock hogs will do well upon a clover pasture, and an ear or two of corn daily. Fresh water should be given in abundance. Regular feeding and watering morning and night, should not be neglected, because other work presses. Remember that hog cholera and other diseases are invariably caused by neglect of proper precaution.

Haying.—Clover as well as grass should be cut before the bloom is past. Some of Professor Atwater's articles have clearly shown the extra feeding value of early cut hay. Prepare every thing for haying, that there may be no delay when the work commences. In the Northern States orchard grass and clover must be cut near the end of the month, and timothy soon after. Hay for sale, may be cut somewhat later, as it will be heavier, though coarser, than that cut early.

Tools and Implements.—All those not required for use, should be carefully stowed away, and those needed should be put in the best order. Keep all tools bright and sharp, and machines should be oiled at the bearings, and greased with tallow and black lead at the gearings. See that all the bolts and nuts are tight.

Work in the Horticultural Departments.

The rush of early planting and weeding is now over in the Northern States, and the first crops ready for use or for marketing. In sending produce to market, always put it up in an attractive manner, as it will command a ready sale, while if put up without any regard to appearance, they will not sell, unless there is a scarcity of the particular kind in market. See article on Packing and Shipping Berries on page 219. Vegetables and fruits will often bring a better price near home, than if sent to a large market. Cities are usually abundantly supplied, while towns and villages are overlooked. Keep all crops weeded, and stir the soil with the hoe or cultivator, especially if the weather be dry. As fast as one crop is harvested, the ground should be freshly manured, and plowed and spaded, and devoted to some other crop. Keep the grounds around the house free from rubbish, bits of paper, and all such matters. Remove docks and sorrel from the fence rows, so that the seed may not be blown into the cultivated fields when ripe.

Orchard and Nursery.

Mulching.—Newly planted trees should be mulched with hay, straw, or other litter, to enable them to recover from the effects of moving.

Pruning.—June is considered by many the best month for removing large limbs from old trees, but unless one has an abundance of help, it is difficult to spare the time at this busy season. Cover all cuts with shellac varnish, paint, or melted grafting wax.

Grafts set last month will need looking after, and if any shoots have started below the graft, rub them off, to prevent their robbing the cion.

Slugs on the foliage of pear, cherry, and other trees, may be destroyed by lime or wood ashes, dusted upon the leaves.

Borers may be prevented by applying a strip of heavy paper, a foot or more wide, around the lower part of the trunk, so that the lower edge is an inch or so below the surface of the soil. Where they have entered the tree, a wire or whalebone may be used to probe for and kill them.

Weeds must not be allowed to grow either among the trees in the orchard, or the young seedlings in the nursery, but the horse and cultivator must be kept in motion where they can be used without danger to the trees. A hoe will be needed, where the cultivator can not go.

Fruit Garden.

Gooseberries are usually marketed green, as they command a ready sale, while the ripe fruit is seldom seen in our eastern markets. Apply sulphur freely, when mildew appears, and use white hellebore for the worms that attack these, as well as

Currants.—Keep the soil between the rows and around the bushes loose. Heavy mulching will prolong the ripening.

Grapes.—Tie up the growing canes before they become so long that the wind will break them, and break out all not needed for fruiting. Use soft cotton-twine or bass in tieing.

Strawberries should have a mulch applied before the fruit gets heavy, to protect the berries from injury by contact with the soil. Cut hay, straw, or leaves are all good, and the one which is most convenient may be used; sawdust should not be used under any circumstances, as it is as bad upon the fruit as the earth. If new plants are needed, allow the runners to root, if not, cut off as soon as they start, to strengthen the old plant.

Blackberries.—Tie up the new canes to stakes with strong twine, and stop them when 5 to 6 feet high. Hoe or cultivate often to kill the weeds.

Thinning.—Most dwarf trees should have from one-third to one-half their fruit picked off just after it sets, so that the rest will be of good size and quality; this will be found to more than pay for the trouble, besides, with young trees just coming into bearing, it is absolutely necessary, if the future good of the tree is regarded.

Kitchen Garden.

Keep the growing crops free from weeds, and do not allow any to go to seed. Hand cultivators and steel rakes, where horse-power cannot be used, are very effective implements, and if they are employed in time, and during a hot day, they effectually kill young weeds, without expensive hand work. There is no weed that grows which cannot be exterminated by constant cultivation.

Asparagus.—After peas have become plenty, the plants should be allowed to grow up, and it will be well to fork in a dressing of well rotted manure. Pull out the weeds during the summer.

Beans.—Plant bush sorts for succession, and Limas may yet be planted, with a fair prospect of a crop, especially if the vines are cut off at the hight of 6 or 7 feet.

Beets.—Plant every two weeks until July, and when large enough thin, and use the thinnings for greens. The early plantings should now be large enough to pull.

Cabbages.—Gather and market the early plantings, and prepare the ground for celery or other late crops. Set out plants for the late crop. Destroy the cut worm and cabbage worm, which are so injurious to these plants.

Celery.—The young plants in the seed bed should be thinned and kept clear of weeds, and when large enough, transplanted previous to the final setting, for which next month will be early enough.

Carrots may still be sown. Thin out to two or three inches, and keep free from weeds.

Corn.—Plant every two weeks at least, until July, and a crop may be had, if an early sort is planted, even as late as the middle of the month. Any surplus may be easily dried for winter use.

Cucumbers.—Sow for late crop and for pickling, taking care to sow the seed thickly, so that enough plants may be left after the bugs have destroyed all they require; covers of netting are often used to preserve the plants from the attacks of the insects, but it is not practicable to protect a large patch. Ashes or plaster sprinkled on the leaves when wet, will help keep them off.

Egg Plants.—Set out in rich warm soil, and hoe often; liquid manure is beneficial.

Lettuce.—There is little use in planting out lettuce at this season, as it quickly runs to seed, unless shade can be given.

Melons.—Plant at once if not done last month, and give an abundance of manure, taking the same precautions as recommended for cucumbers.

Onions.—Weed, and thin when necessary. Near a good market they generally sell best if bunched and marketed before they are ripe.

Parsnips.—Weed and hoe until the leaves get large enough to cover the ground.

Peas generally mildew when planted late. If any are put in now, sow at least 6 inches deep, in rich soil, and stake as soon as they appear above the ground. Clear off the ground where the early sorts have been gathered, for cabbages or celery.

Radishes may be sown in a shady spot.

Rhubarb.—Keep the flower stalks cut, and do not gather too late, as this will exhaust the plants.

Salsify and Scorzonera.—Hoe and weed often; when any plants run up to flower, as they often do, they should be pulled out.

Spinach.—Clear off the old beds, and plant with cabbage or other late growing crops. During the summer sow the New Zealand spinach, which withstands the drouth and grows rapidly, furnishing an abundance during the hot season.

Squashes.—Treat same as cucumbers and melons.

Sweet Potatoes.—Set out at once, if not done already, in well manured ridges, and as soon as the vines show signs of rooting at the joints, move them.

Tomatoes.—If not set yet, do it at once, and provide some support, so that the fruit will not touch the ground, even though it is only hay or brush.

Turnips.—Sow Ruta-baga sorts this month. If insects appear, which they seldom do at this season, dust lime, ashes, or even road dust upon the young plants when the leaves are wet.

Flower Garden and Lawn.

Lawns.—The lawn-mower must be used at least once a week, to keep the turf low, and any annual weeds from going to seed. Where the grass is too near shade trees or shrubs to be mowed, it should be cut with the grass hook.

Walks need to be occasionally scuffle-hoed, to kill young weeds; keep the center slightly higher than the edges, to allow the water to run off quick-

ly; roll or pound, to make the surface firm. Grass edgings along the walks and beds require cutting two or three times during the season, else the edges become ragged and uneven.

Annuals may be sown in the open ground this month, or the young plants set out from the boxes, in which seeds were sown.

Climbers—Provide trellises or supports for all plants which need them, and pinch into shape all which require it.

Bulbs.—Set out all summer bulbs, such as Cannas, Tuberoses, Gladioluses, Tigridias, etc., at once, and as they grow, provide stakes for such as need them, else the stems will be broken by the wind.

Perennials.—If seed is not required, the flower-stalk should be cut when the bloom is over, to throw all the strength into the roots. Some tall kinds require stakes, to keep them in position. Use the rake and hoe often, to kill the young weeds; a steel-toothed rake does very effective work, if used when the weeds are small.

Bedding Plants should be set early this month, and kept in proper shape by pinching. Coleuses will often throw up flower-stalks during the summer, but these should be cut as soon as they show, else the effect of the bed is injured.

Greenhouse and Window Plants.

Shade is imperatively necessary now, and should be given by whitewashing the glass; if this shade is not dense enough, a screen of lath may be made, small enough to be handled easily, and put on the glass over the more tender plants. See that all repairs needed are done at once, and that the houses are kept clear of insects. Give air every day, and during warm nights the ventilators can be left open with safety. Water the walks to keep the house cool.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending May 13th, 1876, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
26 d's *this* m'th	291,000	1,136,000	1,334,000	83,000	221,000	901,000
27 d's *last* m'th	281,000	1,062,000	437,000	31,000	198,000	783,000
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
26 d's *this* m'th	337,000	2,623,000	1,211,000	117,000	41,000	816,000
27 d's *last* m'th	329,000	2,064,000	891,000	68,000	264,000	971,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
26 days 1876	294,000	1,136,000	1,334,000	83,000	221,000	901,000
26 days 1875	264,200	817,000	1,623,000	33,000	239,000	561,000
SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
26 days 1876	337,000	2,623,000	1,211,000	117,000	41,000	816,000
26 days 1875	356,000	1,921,000	2,709,000	64,500	138,000	1,814,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
May 8, 1876	1,563,326	172,090	16,365	33,301	437,387	450,613
Apr. 10, 1876	3,393,074	232,140	68,429	209,381	706,282	436,942
Mar. 6, 1876	4,473,653	302,026	82,562	441,078	757,457	377,278
Jan. 10, 1876	5,802,293	663,982	100,741	325,191	1,080,300	307,438
Dec. 7, 1875	5,878,036	816,962	99,908	305,061	1,232,005	258,364
May 11, 1875	969,804	1,542,924	16,124	16,537	545,209	229,455
Jan. 11, 1875	3,675,122	1,049,900	50,889	191,471	877,014	115,617

4. *Exports from New York. Jan. 1. to May 10.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Peas. bush.
1876	727,578	7,614,910	4,336,520	152,604	—	77,290	319,539
1875	656,296	5,650,821	4,472,235	64,148	165	41,176	199,312
1874	782,059	9,309,705	5,515,551	332,373	—	45,113	158,947
1873	392,997	1,485,326	3,965,351	49,700	11,830	10,601	24,152

Gold has been up to 113⅝, and down to 112⅛, closing May 13, at 112⅜, as against 113 on April 12, and 114⅝ on March 12....With the resumption of inland navigation, and the consequent increase of supplies of produce moving towards the seaboard, more life has been apparent in the general markets, with a more animated inquiry for the leading articles, especially in the Breadstuff and Provision lines....Flour and grain have been quite freely dealt in, in good part for export, but at variable prices. Toward the close the market ruled stronger, influenced by cable reports of cold and unfavorable weather, and firm grain markets abroad. Calculations as to the probable effects of a war in Europe growing out of the vexatious Eastern question, were also indulged, and, in instances, led to a more confident temper on the part of holders of exportable breadstuffs. Continental buyers have been purchasing very liberally, for markets extending from Portugal to the Baltic, particularly for Germany: and recent freight engagements of grain room on berth and charter have been unusually extensive for Continental ports. The better qualities of wheat, prime rye, and prime corn, are taken to meet the requirements of the Continental trade....Provisions have been unusually active in the pork and lard interests, but at decidedly lower rates, closing more firmly. Butter, cheese, eggs, and beef, also cheaper....Cotton declined materially under free offerings of stock, with a livelier movement reported largely on speculative account....Hops and seeds quiet at the quoted rates....Wool has been very moderately sought after and quoted cheaper. California spring clip now arriving freely, and attracting more attention from buyers at the ruling figures, which are much lower than the opening quotations of last year. Recent failures in the manufacturing line have had a depressing effect on this interest....Tobacco, shipping hay, and desirable lots of straw have been of readier sale and quoted steadier in price....Ocean freights have been tending upward toward the close, with an active call noted for room for grain and provisions, and a fair demand for accommodation for flour, resin, cotton, and tobacco. Grain rates by steam to Liverpool, closed on the 12th May at 7¼@8*d*; to Bristol at 6½@9*d*; to Glasgow at 9*d*; to Hamburgh at equal to 10*d* per bushel. Provisions by steam to Liverpool, 30*s*.@35*s*. per ton; Cotton at ½*d*. ℔ lb. Grain tonnage for Cork and orders, at 5*s*. 9*d*.@6*s*. per quarter. Grain rates from San Francisco to Liverpool, for the maturing crop, quoted at 60*s*.@65*s*.

CURRENT WHOLESALE PRICES.

	April 13.	May 13.
PRICE OF GOLD	113	112 3-8
FLOUR—Super to Extra State	$4 20 @ 5 65	$4 00 @ 5 50
Super to Extra Southern	4 25 @ 8 75	4 20 @ 9 00
Extra Western	4 85 @ 9 50	5 00 @10 00
Extra Genesee	5 70 @ 7 00	5 65 @ 7 00
Superfine Western	4 20 @ 4 65	4 10 @ 4 50
RYE FLOUR	4 25 @ 5 25	3 50 @ 5 10
CORN-MEAL	2 75 @ 3 70	2 90 @ 3 60
WHEAT—All kinds of White	1 30 @ 1 55	1 35 @ 1 60
All kinds of Red and Amber	1 00 @ 1 45	1 05 @ 1 50
CORN—Yellow	70 @ 73	63 @ 67
Mixed	70 @ 72	57½@ 63
White	70 @ 72	58 @ 70
OATS—Western	43 @ 52	37 @ 52
State	43 @ 55	40 @ 53
RYE	86 @ 1 00	79 @ 92½
BARLEY	70 @ 1 12½	Nominal.
HAY—Bale, ℔ 100 lbs	75 @ 1 15	70 @ 1 12½
STRAW, ℔ 100 lbs	60 @ 1 10	60 @ 1 12½
COTTON—Middlings, ℔ lb	13½@ 13½	12½@ 12⅝
HOPS—Crop of 1875, ℔ lb	13 @ 19	12 @ 18
FEATHERS—Live Geese, ℔ lb	40 @ 60	35 @ 60
SEED—Clover, ℔ lb	16 @ 17	16½@ 17
Timothy, ℔ bushel	2 50 @ 2 75	2 75 @ 3 00
FLAX, ℔ bushel	1 60 @ 1 65	1 50 @ 1 60
SUGAR—Refin'g & Grocery ℔ lb	6½@ 9⅛	6¾@ 9⅛
MOLASSES, Cuba, ℔ gal	20 @ 36	32 @ 40
New Orleans, new crop, ℔ gal	45 @ 60	50 @ 60
COFFEE—Rio (Gold)	16 @ 19	15½@ 18½
TOBACCO, Kentucky, &c., ℔ lb	5 @ 24	6 @ 25
Seed Leaf, ℔ lb	5 @ 35	5 @ 35
WOOL—Domestic Fleece, ℔ lb	25 @ 25½	25 @ 50
Domestic, pulled, ℔ lb	20 @ 45	22 @ 38
California, clip	12 @ 28	12 @ 30
TALLOW, ℔ lb	8¾@ 8⅞	8½@ 8⅝
OIL-CAKE—℔ ton	40 00 @41 50	39 50 @40 00
PORK—Mess, ℔ barrel	22 75 @22 87½	21 00 @21 25
Prime Mess, ℔ barrel	21 37½@21 50	21 00 @21 25
BEEF—Plain mess	11 00 @12 50	12 00 @12 50
LARD, in tcs. & bbls, ℔ 100 lb	12 87½@13 85	12 62½@13 25
BUTTER—State, ℔ lb	25 @ 43	23 @ 32
Western, poor to fancy, ℔ lb	20 @ 38	17 @ 30
CHEESE	4½@ 13½	4½@ 13
BEANS—℔ bushel	50 @ 1 60	50 @ 1 62½
PEAS—Canada, free, ℔ bu	1 18 @ 1 20	1 15 @ 1 20
EGGS—Fresh, ℔ dozen	18½@ 21	12½@ 15½
POULTRY—Fowls	15 @ 22	13 @ 20
Capons, ℔ lb	26 @ 32	30 @ 35
Turkeys—℔ lb	15 @ 20	11 @ 19
Geese, ℔ pair	1 00 @ 3 00	75 @ 2 25
Geese, ℔ lb	9 @ 15	— @ —
Ducks, ℔ pair	80 @ 1 50	65 @ 1 25
Ducks, ℔ lb	17 @ 23	— @ —
Roosters, ℔ lb	8 @ 10	7 @ 8
Chickens, spring, ℔ pair	— @ —	60 @ 1 12½
Chickens, Phila., dry pick'd lb	— @ —	23 @ 40
PLOVER, ℔ doz	— @ —	87½@ 1 12½
DUCKS, Wild, ℔ pair	25 @ 1 25	— @ —
SNIPE, per doz	60 @ 1 75	30 @ 1 75
PIGEONS, wild, ℔ dozen	1 40 @ 1 75	75 @ 1 50
LETTUCE, ℔ 100 heads	— @ —	3 50 @ 4 25
CUCUMBERS, hot-house, ℔ doz	1 75 @ 2 50	1 00 @ 1 50
" ℔ crate	— @ —	2 00 @ 4 00
TURNIPS ℔ bbl	50 @ 75	50 @ 75
CARROTS, ℔ bbl	1 00 @ 1 50	— @ —
BEETS, ℔ bbl	1 00 @ 1 50	— @ —
" ℔ crate	— @ —	1 25 @ 1 50
STRING BEANS, ℔ crate	— @ —	1 50 @ 3 00
CABBAGES—℔ 100	4 50 @ 8 00	4 00 @ 8 00
" ℔ bbl	— @ —	1 25 @ 1 75
ONIONS—℔ bbl	2 50 @ 5 50	1 00 @ 6 00
" ℔ crate	— @ —	1 50 @ 1 75
POTATOES—℔ bbl	50 @ 1 25	50 @ 1 50
" New ℔ bbl	8 00 @ 9 50	3 00 @ 5 00
SWEET POTATOES—℔ bbl	3 50 @ 4 25	3 00 @ 4 50
BROOM-CORN	3 @ 11	3 @ 10
GREEN PEAS, ℔ crate	1 75 @ 3 50	1 50 @ 1 75
TOMATOES, Bermuda, ℔ etc.	1 00 @ 1 50	50 @ 65
RHUBARB, ℔ 100 bunches	— @ —	2 00 @ 4 00
ASPARAGUS, ℔ doz. bunches	— @ —	1 50 @ 3 00
RADISHES, ℔ 100 bunches	87 @ 3 00	1 50 @ 3 00
GRAPES, ℔ lb	6 @ 8	— @ —
APPLES—℔ barrel	2 50 @ 4 50	2 75 @ 4 50
CRANBERRIES—℔ bbl	12 50 @15 00	13 00 @15 00
" ℔ crate	— @ —	4 00 @ 5 00
SQUASH, ℔ bbl	1 25 @ 1 75	1 50 @ 2 50
ORANGES, Florida, ℔ bbl	5 00 @ 9 00	— @ —
STRAWBERRIES, ℔ quart	— @ —	25 @ 45
MAPLE SUGAR, ℔ lb	— @ —	6 @ 11
MAPLE SYRUP, ℔ gallon	— @ —	62½@ 1 00

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.	Tot'l.
April 17	7,731	53	2,072	18,914	22,210	50,980
April 24	9,082	47	3,659	18,513	20,298	51,599
May 1	8,798	59	3,748	13,375	20,126	46,106
May 8	9,331	32	3,223	16,967	24,943	54,496
May 15	10,705	62	3,517	13,59	18,851	46,294
Total for 5 Weeks	45,647	253	16,219	80,928	106,428	249,475
do. *for prev. 4 Weeks*	31,556	235	5,150	59,275	80,739	176,935
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	
Average per Week	9,129	50	3,244	16,185	21,085	
do. do. *last Month*	7,889	58	1,282	14,819	20,184	
do. do. *prev's Month*	8,166	81	797	20,100	23,733	

The prices for the past five weeks were as follows:

WEEK ENDING	Range.	Large Sales.	Aver.
April 17	8¼@12½c.	9¼@10¼c.	9¾c.
April 24	8¼@12½c.	9¾@10¼c.	9¾c.
May 1	8½@12 c.	9½@10¾c.	10 c.
May 8	9 @12 c.	9¾@10¾c.	10¼c.
May 15	8½@12 c.	9½@10½c.	10 c.

Beeves.—The market at the beginning of our report was in a state of collapse, prices being 1½c. ℔ lb. less than a year ago, with larger supplies then than now. Several favoring circumstances combined, helped the market up fully ½c. ℔ lb., the next two weeks, and left it strong and active. The export of 160 or more carcasses of the best quality of beeves weekly to England, is not without its effect here; although this export is not important as to numbers, yet, as it takes the primest cattle, which are always few and scarce, it affects the top prices and helps the average. At the close of our report we note a decline of ¼c. ℔ lb. on a dull market. Fair corn fed native steers sold at 9¾ @ 10c. ℔ lb., and a few only reached 10½c. ℔ lb. Prime cattle estimated at 56 lbs. ℔ cwt., sold for 10¾ @ 11c., and extra at 57 lbs. to the cwt., at 12c.

Cows.—The milch cow market is quite demoralized. The demand is light, and if supplies had not fallen off considerably, by the withdrawal of stock to the dairy localities in the country, where they are more salable, prices would have been quoted lower. Sales have been slow, without any fixed prices, which have varied from $40 to $50 for common, to $75 for choice....**Veal Calves.**—Prices have kept up well, considering the quantity of poor calves which have been sent in by dairymen. Hundreds of poor things below 100 lbs. have been sent to market, and brought from 4 @ 5c. ℔ lb., live weight, and smaller ones have sold by the head for $2 to $3. Meanwhile the best calves, weighing 200 lbs., have sold for 9c. ℔ lb. As we close, the market is fair, with thin calves worth 5 @ 5½c. ℔ lb., and good selling at 8c., and selections at 10c. ℔ lb. Weaned calves brought 3½ @ 4½c. ℔ lb....**Sheep and Lambs.**—The exporters of meat have entered the sheep pens, and the past month 900 of the fattest sheep have been dressed and shipped to England. The market has been good throughout the month, closing sales were made at 5¼ @ 5¾c. ℔ lb. for thin sheep; 6 @ 6½c. ℔ lb. for good, and 7c. ℔ lb. for extras, all live weights and clipped. Quotations are now all for clipped sheep.....**Swine.**—Speculators, known in the market as "bears," have ravaged the pork market, and prices are down about one cent a pound since last month, closing at 9 @ 9¾c. for dressed. In relation to the prospects of the market, the Chicago Live Stock Reporter says: "It is contended that hogs would not have reached the high prices which have been current since the opening of the year, but for the belief that more than ordinary scarcity, and the difficulty, if not impossibility, of meeting the wants of the market through the spring and early summer seasons. The supply, however, has been far larger than was anticipated, and is steadily increasing, not merely in numbers and condition, thus, as it is now believed, fully showing that western farmers are better off than we had supposed them to be. It is not, however, at all improbable that the views of dealers having shifted from one extreme will go to the other, and therefore that a very short time will be sufficient to show that after all it will require the best efforts of western hog-growers, to meet the demand of present and ensuing seasons."

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	41.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano (10 p. ct. ammonia), ℔ ton	$54.00@$55.50
" " (Rectified), per ton	61.50
Mapes' Nitrogenized Superphosphate, per ton	45.00@ 50.00
" Plain Superphosphate (mineral), per ton	30.00@ 35.00
" Bone Superphosphate, per ton	40.00@ 45.00
" Prepared Fish Guano, per ton	35.00@ 40.00
Fish Guano (crude in barrels), per ton	24.00
Bone Black, per ton	25.00@ 28.00
Bone Flour, per ton	40.00@ 45.00
Rawbones Ground (pure), per ton	33.00@ 40.00
Rough Bones, per ton	22.00@ 25.00
German Potash Salts, (25@35 per cent), per ton	20.00@ 25.00
Gypsum, Nova Scotia, ground, per ton	8.00@ 9.00
" In barrels, per bbl	1.25
Wood Ashes, per bushel	16 c.@18 c.
Nitrate of Potash (95 per cent.), per lb	8½c.@ 9 c.
Chloride of Potass. (muriate of potash, 80p.c.), lb	2¾c.@ 3¼c.
Nitrate of Soda, per lb	4 c.@ 4½c.
Sulphate of Ammonia (25 per cent.), per lb	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia	$3.00@ $ 4.00

Long Island Stock Sales.—A fair for the sale of stock designed to accommodate Long Island, is to be held at the Queen's County Agricultural Society's fair grounds on the 21st and 22nd of June. This is to be the first of a continued series of annual fairs, and we are glad to be able to make this announcement of the beginning of a much needed and very useful method of disposing of or purchasing stock. The animals offered will be sold to the highest bidder without reserve. We understand that a large number of thoroughbred stock from the herd of Mr. Crozier, of Northport, will be offered for sale, besides a number of other animals.

July...4...1876.

Last Call.

One Month and 4 Days.

Large Pay for Little Work.

Centennial.....Offering.

Of Interest to Two Classes.

1st Class: Those who have sent in some names for Premiums.

2d Class: All Others.

1st.—Those who have sent in some names on premium lists should now fill up the lists, and send in for the desired premiums. The offers will be closed and withdrawn on July 4, 1876. There is plenty of time to do this during the next 34 days.

2d.—There is plenty of time for *any* person desiring it, to show his (or her) paper to two, three, or more others, explain its value, ask and secure and forward their subscriptions, beginning now, or at the commencement of the volume, or any other time desired, and in return for this, the Publishers will make you a fine Centennial Gift of any of the *good articles* in the Premium List, corresponding to the number of names sent by you. Over **15,000** such presents have been made by the Publishers in this way, and with almost universal gratification to the recipients. **Any Person** (YOU, READER) can *easily* get one or more of these fine articles free.—(If you have not the illustrated descriptions of the premiums, send for a copy at once, and it will be forwarded free.)

A lady received one of Steinway's splendid **$650 Pianos** for subscribers collected mainly in June.

Many others have obtained other valuable articles in return for names collected as late as this month.

There is nothing fanciful, and no clap-trap at all in this matter. There are tens of thousands of persons, a few at least in every place in the country, who **ought,** for their own **pleasure** and **profit,** to have just the kind of information that is being given in this journal during this year. It would directly and indirectly **pay** them many times the cost, and if they knew about the matter they would certainly have it. The Publishers desire to reach such persons. They know that those who once begin to read the paper, usually continue to do so through a long series of years, and they intend to make the paper so valuable that no one will want to cease taking it. But they cannot go and speak to them personally.

So they (the Publishers) desire to have the *Readers* speak of the paper to their friends and neighbors, and explain its character and utility, so that they will desire to have it, and the Publishers are quite willing to **pay** all who do this, much more than the profit on the subscription for one or two years.

Therefore they offer **valuable articles** (of the *best* quality and character) to each and **every one** who will take the little trouble required to ask two, or three, or more, neighbors to subscribe. These articles, bought for cash at wholesale, are more valuable and *much better pay than could be given in money,* but are just as good, or better, than money; they are carefully selected and warranted good.

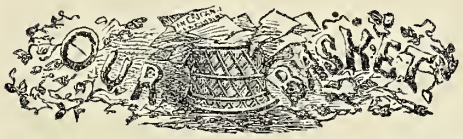
This plan works well all round, and has done so for many years. The Publishers secure enlarged circulation. Those assisting in this, get the good premiums *without money expenditure.* Those induced to subscribe are made acquainted with a good paper, and are benefited.

Now, READER, will you not join in the enterprise? Can you not, *this month,* beginning to-day, speak of the paper to those you meet, or take an evening or rainy day to do it, and thus secure two, three, or more names, and send them in? You can select any article you desire from the Premium List, corresponding to the names you send, whether many or few. MANY have found this so profitable, that they have given up everything else, and gone into it as a business, and made large salaries by selling the articles they have obtained. Thousands of others have secured for themselves, *free,* such things as these: **Gold Pens and Pencils—Watches—Fine Table Cutlery—Elegant Silver-plated Articles—Scissors in Cases—Pocket Knives—Boy's Wagons—Children's Carriages—Floral Sets—Microscopes—Melodeons—Pianos—Guns—Rifles—Books, etc.**

Try *your* hand at it *now.* In the next one month and 4 days, (June, and July 1–4), you can get one, perhaps several of the above articles, or others of the 100 offered in the Premium List. If you have not kept your copy of the Premium List, send and get another at once.

Try it for once, and see how it will work. A little practice now, may pave the way for you to get hundreds of dollar's worth next year.

YOU can do this as successfully and satisfactorily to yourself, as the other 15,000, who have already done so.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

The House-Building chapters and illustrations given in every number of the *American Agriculturist* now, as for 18 months past, and to be continued, are of great value. They are new, the information is of the practical, common-sense order, and the cost of each plan is of great convenience, as it is carefully estimated. These articles are alone worth more than the cost of the paper to half the families of the country—to those hoping to build in the future, those planning to build soon, and as an aid in changing houses already erected.

Our National BAZAAR this month, contains the usual assortment of good things, advertised by trustworthy men. It will always pay any one to look all through the advertisements, and see what is offered, by whom, at what price, etc. Many a man has got a valuable new idea from seeing what others say about business matters, which has started his own thought in a profitable direction. When writing to any of our advertisers, for information, catalogues, etc., or sending orders to them, please let them know that you belong to the great *Agriculturist* family, and you may expect and will receive good treatment. Our advertisers know that we carefully exclude any one who does not promptly perform what he promises in his advertisement.

Broom-Corn and Brooms, is the title of a work of about 60 pages, in which the editors of the *American Agriculturist* have brought together from various sources all the available information upon these subjects. It gives the various methods of treating the crop in different parts of the country, from preparing the soil and planting the seed, to baling the crop and sending it to market, and includes an account of the management on the great Broom-corn farms of Illinois. The methods by which the farmer can make brooms for home use, and those followed in manufacturing for market, are given in detail, and as also other parts of the work, abundantly illustrated, the whole forming the most complete treatise on this increasingly important crop in print. Published by the Orange Judd Company, New York. Sent post-paid, in paper 50c, in cloth 75c.

Did It Pay?—Thirty-three years ago two farmers settled side by side, with about equal advantages as to soil, markets, etc. One of them subscribed for the *American Agriculturist,* and occasionally bought a book or two about his business, the whole costing him only $6 a year. His boys read and *thought* about their work, became interested in and *respected* it, and were happy in their toil, because they had something to think about. They grew up intelligent, and settled as good prosperous farmers, respected and influential....The other farmer "couldn't afford papers and books"; (he could afford 6 cents a day, or $20 a year, for tobacco, beer, etc.) His boys worked sullenly by day, and "skylarked" at night; they despised and hated their work, which for them was only exercising brute force, with little mind applied. When old enough to escape parental restraint, they quit the farm, one for this, and another for that, and *none* of them ever amounted to anything. Six dollars a year, or even $1.50 a year, would have made a wonderful difference—would have changed their whole course of life. Would it have paid?....Please show this item to some of your neighbors, who have perhaps not thought of this matter, and invite them to try this or some other good journal for the present year. You may do them a positive good by such a hint.

Frauds in Fertilizers.—There is undoubtedly much profit to be gained in using good artificial fertilizers of the right kinds, but from the nature of the case, it is difficult to detect frauds. It is so easy to color, and compound worthless materials, that one is only safe when buying of thoroughly known and entirely trustworthy manufacturers, and with a guarantee as to the composition. An "Agricultural Experiment Station," with a "Fertilizer Control System" is needed in every State, almost in every county. Connecticut has made a beginning, and the saving to that State will be

many tens of thousands of dollars this first year. Take a single illustration. A fertilizer, called "*American Bone Fertilizer*," said to be made in New Jersey, was very highly puffed, pronounced cheap at $60 per ton, but sold "for introduction" at $55 a ton. Considerable purchases were made by farmers, and probably the State would have been flooded by it, as the statements were very plausible. But samples were taken to the Experiment Station, and after repeated careful analyses, of samples from different purchasers, the utmost of valuable fertilizing material that could be found in it, *did not amount to nine dollars a ton!* About half of it was found to be sand!—This is the worst case yet brought out, but the hundreds of analyses already made and under way, are showing the farmers of that State that in some kinds of fertilizers they are getting two or three times as much for their money, as in others equally puffed, and praised, and "certificated."

Hand-Book for Fruit-Growers, by F. R. Elliott. Rochester: D. M. Dewey. This is a small and useful work, intended to give those who grow fruit for their own use a compact guide as to treatment, and select lists, containing only the most desirable varieties, thus avoiding the bewilderment caused by the many varieties presented in larger works. A chapter on home adornments is added as an appendix to the portion treating of fruits. Price, post-paid from this office, 60 cents paper, and $1 cloth.

The American Veterinary College.—In former years we have often mentioned in terms of high commendation, the "N. Y. College of Veterinary Surgeons." Some two years ago the course of the trustees being unsatisfactory, the whole faculty left the college, and formed a new institution, so that the Am. Veterinary College is in all its essentials the same as the old one, and the good words we in former days applied to that, now belong to the new college. Doctors Liautard, Large, and others who gave prominence to the Faculty of the College of Veterinary Surgeons, occupy similar positions in the Am. Veterinary College. We notice that the present class, which though larger than in former years, numbers only about 20, when it should be ten times as many. While young men are thronging the regular medical colleges, to prepare themselves for a profession already overcrowded, there are few who choose a career as veterinary surgeons, an honorable profession, and one which calls for as thorough acquirements and skill as the other, and in which the opportunities for distinction and profit are very much greater. Those who wish for information about the college, should apply to Prof. A. Liautard, 141 West 54th St., N. Y. City, which is also the locality of the hospital attached to the college.

A Manual of the Apiary.—By Prof. A. J. Cook, of the Michigan Agricultural College. This is an illustrated 8vo. pamphlet of about 60 pages, and embodies the author's lectures and teachings in apiculture. As it reaches us just as we go to press, we are unable to speak of its contents, other than to say that they look attractive, and that we know that the author is abundantly able to make a useful work.

The Rural New Yorker, founded, and until within a year or two conducted, by Mr. D. D. T. Moore, has recently changed hands, Mr. G. A. C. Barnett continues to be, as he has been for some time, the publisher, and Mr. A. S. Fuller assumes the duties of editor in chief, with Mr. E. S. Carman as associate editor. Mr. Moore retires from a long editorial career with the best wishes of a wide circle of friends, including those of the Agricultural Press, with whom, personally and in his columns, he always maintained the most pleasant relations. For some time past Mr. Moore has done little editorial work, else the unfair misrepresentations of the position of those who have criticised its articles, would not have appeared in its columns, nor would the unseemly quarrel with a Rochester rival have been tolerated. The Rural had for some time been conspicuous for its abuse of another journal, and a stream of epithets such as we are happy to say are rarely seen in agricultural papers, disfigured its columns. The incoming of the new administration was marked by a sudden cessation of that style of controversy, which consists in calling names. Mr. Fuller has the ability to bring up the Rural to its former excellence, an undertaking in which we, with hosts of other friends, wish him much success.

Catalogue of Agricultural and other Tools.—We have been favored with a catalogue of Messrs. Semple, Berge & Co., of St. Louis, Mo. This handsomely bound and neatly printed book, is also a very interesting one, as it contains engravings and descriptions of tools, implements, and machines, far too numerous to mention in detail. It is sufficient to say that almost every thing needed for the farm, workshop, factory, mill, mine, or quarry, from a steam engine, a reaper, or a wagon, down to a bolt or nut, may there be found and referred to. Dealers in agricultural implements and hardware of all sorts, will be particularly interested in this catalogue.

The American Kennel, by Arnold Burges. New York: J. B. Ford & Co. A handsome square 8vo., of 200 pages, devoted to the breeding, management, and breaking of sporting dogs, especially setters. There are several fine portraits of setters and pointers, and pedigrees are given of various imported animals and their progeny. It bears the impress of thorough work on the part of both author and publishers. Sent from this office, post-paid, for $4.00.

Some New Architectural Books.—Works upon architecture seem to be legitimately related to rural books, and the Orange Judd Company, finding that orders for works on architecture came so frequently with those for books on rural affairs, have gradually increased their stock, until architectural books have become an important department of their business, and, as will be seen by their Book List, they offer a large number of the leading works in this specialty. Those noticed here are some of the latest additions to their stock, and are sent, post-paid, at the prices given.

VILLAS AND COTTAGES, or Homes for all, by Wm. M. Woollett, N. Y.: A. J. Bicknell & Co. This contains 21 designs, including plans, elevations, and perspective views. Some of these are very pleasing, and all are marked by originality. Price, $3.00.

MODERN AMERICAN HOMESTEADS, by Daniel T. Atwood. Mr. Atwood is a practical architect, and most of these designs are of houses recently erected; the work is illustrated by 46 plates of dwellings of moderate cost, stables, ice-houses, and other out-buildings, including several especially designed for the Southern States. Price, $3.50.

ARCHITECTURAL IRON WORKS, by Wm. J. Freyer, Jr., New York: John Wiley & Sons. This work of 220 pp., 8vo., is full of practical details, useful to all who make or employ the various forms of iron used in architecture; illustrated by numerous engravings. Price, $3.50.

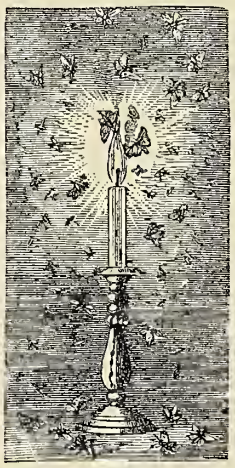
Animal Parasites and Messmates, by P. J. Van Beneden. This volume, one of D. Appleton & Co's. International Scientific Series, is an attractive work upon a subject which, though repulsive, is not the less important. The fact that many of the evils which afflict humanity, are due to internal parasites, that pass one portion of their existence in the animals used for food, is now well established, and the surest way to avoid these is to know their histories. This work, illustrated by numerous engravings, gives a full account of most of the internal and external parasites on man and other animals, and gives the later discoveries in this interesting department of natural history. Price $1.50.

Orchid Culture, by E. S. Rand, Jr. New York: Hurd & Houghton. It shows great faith in the future progress of horticulture in this country, when a publisher puts forth a work upon such a rare specialty as that of Orchid Culture. The present is an exceedingly neat 12mo. volume of nearly 500 pages, in which the author gives his own experience, supplemented by that of others for species with which he is unacquainted. Of course, the value of the work as a guide can only be properly judged of by those familiar with orchid culture, for the rest, it is very full and complete, and the author writes with an enthusiasm that we hope may be the means of inducing others to engage in the culture of these charming plants. While most of the East Indian orchids require a high temperature, those from Mexico and the Andes do better in a moderate heat, and may be grown in an ordinary grapery. We know of no branch of horticulture that can be undertaken by persons of moderate means, that will give a more satisfactory return for the outlay than the cultivation of orchids, and we hope that this work may tend to increase the knowledge of and love for these plants. We regret that Mr. Rand did not give the descriptive characters of each genus, and are quite surprised at finding no account of the peculiar relations of insects to these flowers, though, perhaps, these may not be regarded as belonging to orchid *culture*. Sent post-paid by the Orange Judd Company for $3.50.

Scale Insects on House Plants.—Mrs. "L. C. R.," Herkimer Co., N. Y. These are easily removed from hard-wooded plants by means of strong soap-suds, applied with a stiff brush; an old tooth-brush or nail-brush will answer. Plants with soft stems would be injured by a scrubbing; the scale upon these may be easily picked off. A sliver of wood whittled down like a toothpick, we find to be a sovereign remedy for mealy bugs, as well as scale upon soft wooded plants.

"The Cactus."—"B. S.," Washington, D. C., writes, that several would like to know how to treat "the Cactus." While there are many of the Cactus family in cultivation, there is no one that is pre-eminently *the* Cactus. Those in general cultivation are either *Epiphyllums*, which, from their jointed stems, are commonly called "Crabs-claw Cactus," or species of *Cereus*, which have long cylindrical stems, like the "Rat-tail Cactus, (*C. flagelliformis*,) or triangular, winged, or flat, like the gorgeous *Cereus speciossimus* and its varieties and relatives. These plants are mostly from countries where months pass without a drop of rain; when the rains come, they soon burst into bloom, make their growth, and ripen their stems all in a short time, when they go to rest ready for another long, dry spell. In cultivation, these conditions must be imitated. The Epiphyllums, or Crabs-claws, mostly flower in winter, one blooming in early spring; these need water while blooming, and making their growth immediately afterwards; when the growth is complete, which will be when the new joints become large, firm, and like the old ones, then very little water will be needed, and during summer they should not be exposed to rains. The others, the *Cereuses*, are mostly summer bloomers; they make grand decorations for verandas, and should not be, as is sometimes done, plunged in the borders, as their flowers, to show their full beauty, should be near the level of the eye. They bloom from May until the end of summer, and during this time, and while making new growth, are to be watered, though moderately. When the cool nights of September come, they must be taken into the house, and may be kept quite dry all winter. The reason for most of the failures is, keeping the dormant plants wet during the winter. In a greenhouse they may be stored on a top shelf, and left in quiet.

Sundry Humbugs.



In writing of humbugs we have heretofore mentioned the fact, that much of their success is owing to the existence in the community of a large class of persons so peculiarly constituted that they are not only ready to be, but apparently desirous of being cheated. Some persons will invest all the money they can raise in lottery schemes; often repeated failure so far from discouraging them, only strengthening their belief that their "luck" will soon come. We have known persons, who through a long series of years were devoted to quack medicines, taking each new nostrum as it came out, and warmly sounding its praises until a newer medicine displaced it in their esteem. So it is with other classes of humbugs, there are enough who think that in some way they can get something for nothing to make quite a large class of customers. There is not, so far as we are aware, any help for those afflicted with this mania; mere loss and failure with one, only seems to sharpen the appetite for another. One party sends us a list of concerns which he has found out to be frauds, and wishes us to publish them as humbugs, and at the same time asks about the character of certain other concerns, who are in the same line, put out closely similar, if not identically the same circulars, offering the same rubbishy stuff. The writer evidently not satisfied with his experience with three of these shops which propose to put people on the rapid road to fortune for 50c. or $100, is ready to make other ventures in the same line. The various cases in which we are asked

"IS THIS A HUMBUG?"

are amusing, and we have before us a number of letters embodying this question as to various schemes. We cannot reply to these in detail, but to meet these cases, have more than once given a very safe rule, which is, if a scheme or article is presented in such a way that you have to write us to inquire about it, let that project or that article alone....Here is one "V" who wants

"PSYCHOMANCY, OR SOUL CHARMING,"

and though "V" would like to "charm" souls, he has a frugal mind, and would not go to the wrong shop, consequently he sends the names of several concerns who offer to sell the books or stuff to do it with, and asks whether they are swindlers or not. We do not know if we have a very clear idea as to what "soul charming" is, and not being a good judge of the article, are quite unable to say whether the parties referred to offer the genuine thing or not. "Soul charming," indeed! here is a man with intelligence enough to write, whose letter, on

this day, and at the very hour when the opening of the great exhibition showing our progress in a century, is being welcomed with cannon and bells, stares us in the face, and wants us to help him about "Soul charming" ....As Sydney Smith, when advised to "take a walk on an empty stomach," asked his physician "whose stomach?" so we are tempted to ask, "whose soul," "V.," do you want to "charm," and whyfore should you "charm" it? We cannot give you the advice you seek; on general principles we would advise you not to try to charm other people's souls; but if you wish to improve on your own, there are some very excellent directions to be found in the writings of one Matthew, beginning at the 5th chapter.

"IS THE WYOMING LOTTERY A HUMBUG?"

is the purport of several letters that have come so near together that it looks as if some parties were trying to get us to commit ourselves in writing, and then annoy us with a suit at law. If this were the object, we hope that they are satisfied with their success. We regard all lotteries as humbugs, according to our meaning of the word—in that they are and must be, however managed, unfair. Many pay their money and get nothing in return, while a few, paying only the same amount of money, and without doing anything to merit it, receive many times more than they paid. We hold that such transactions as these are wrong, and have a bad effect on the community in which they are allowed. The result to the losers is of little consequence, but the effects upon the winners, in teaching them, and others by their example—that money can be got in some other way than by giving the worth of it, is entirely wrong and absolutely pernicious.

BUT IS THIS WYOMING LOTTERY FAIRLY MANAGED?

We say no! and that it is a fraud upon the community in this: It sends out circulars to particular persons, offering to guarantee that by the investment of a certain sum, these particular persons will draw certain prizes. This is done on the plea that it will induce the recipients of these prizes to act as agents, and that their success will advertise the lottery. The only leg that the lottery had to stand upon, was that it was a game of chance, and that one person's chance was as good as that of another. But here is this Wyoming fraud sending its lithographed circulars all over the country, and by holding out a guarantee of a prize, trying to induce parties to act as stool pigeons. Lotteries in general are bad enough, but we regard this of Wyoming as a very mean fraud. The lottery publishes a paper, partly given to quack medicines and partly to the lottery. It has a column devoted to "What the Press says," and though the *American Agriculturist* is copyrighted, we shall not regard it as an infringement of our rights if they place the above among the "Sayings of the Press."

SEED AND PLANT HUMBUGS.

Last month we gave in a separate article some account of the "New and Wonderful Seeds" that are offered with such extravagant claims that, whatever the plants themselves may be, the descriptions of them are humbugs....What was said in the article referred to in regard to "Ivory Wheat," was entirely based upon the advertisement; we have since received some of these seeds, and find that they are, as we conjectured, one of the forms of Sorghum, Indian Millet, or Guinea corn. The offering of this stuff as "Ivory" or any other kind of "wheat," is a fraud upon farmers. Those who have been induced to plant any considerable quantity of this stuff, may feed the product out to animals, but they can find no market for it. Cleveland, Tenn., is the headquarters of this and other marvellous seeds... A worthy successor to Layfayette & Co., advertises his choice wares in the St. Louis papers. He has gooseberries and currants which "bear fruit twice a year," "and the asparagus of Caucasus, which are good to eat three months after they are planted." The branching pop-corn introduced several years ago, turns up this year as "Peabody Corn," a good enough pop-corn....We have kept the run of all things very closely for the last 25 years, and are very sure that all seeds and plants of any permanent value are first introduced by the regular dealers in such articles. When a wonderful Prince somebody, or Emperor something cabbage, or a bran new hardy sugar cane, or some new revelation in wheat is offered by some unknown person, it is well at least, to touch it cautiously.

THE STOCK GAMBLERS

now try a new dodge in advertising. They send postal cards all over the country informing people if they wish to know how to make money with a guarantee against loss, they must send for such a book. It is of no use to write us, as a great many do, asking as to the character of these parties and the safety of investing with them. We cannot find that they are known to the regular Stock Board, but are mere skirmishers on the outskirts of the army. When, as recently happened, one known as the longest headed and shrewdest of all the stock speculators, one who knew all the "ins and outs" of "The Street" made a melancholy failure, what sort of a chance is there for *you*, with your money in the hands of an unknown party?....We are asked about investing in a

BLACK HILLS ASSOCIATION,

which proposes to facilitate persons in getting to the Black Hills; we have examined the prospectus, and find it very faulty, for the reason that the most important point is omitted—there is no provision for *getting back again*, and help is much more likely to be needed in this direction than in the other. Certain restless mortals will go to the Black Hills, for somebody once found a few grains of gold there; but we advise no one to go unless he takes money enough to bring him back.

MISERABLE BOOKS.

It is very doubtful if decent right-thinking people are aware of the stream of foul literature which, under the pretense of teaching physiology and other matters, is in circulation among young persons, of both sexes, from the ages of 15 to 18. All the nastiness does not emanate from cities, but small towns in the country often have a bad notoriety as the source of this style of literature. So far as one can judge from their circulars, these "Secret Instructors," "Marriage Guides," or by whatever name they may be called, have very much the same contents, and only differ in having the name of some other "Doctor" as their reputed author. We have a circular before us which is a fair sample of the whole batch; the book professes to be "Doct.——'s Marriage Guide," and after enumerating a lot of stuff which we do not care to repeat, it is also a "Private Medical Instructor for All, married or single, old or young, male or female," and a lot more. The list of contents shows that it is a vile book, but more than this there is the same "Doctors" "Book of Secrets," offering to tell everything from how to make "old horses appear young," to "produce the diamond, ruby, etc." Besides these, there is included in the same volume the "Seventh Book of Moses," pretended to be a suppressed book by the great law-giver. If the announcements of the other books are nasty and absurd, this is wicked and profane in presenting its claims. Yet their vile circular finds its way into the hands of the youth, and the rascals who issue manage to introduce them into the most select schools. While the circulars of these books avoid absolute obscenity, they are quite as mischievous as those which the law excludes from the mail.

MEDICAL MATTERS.

How can we make our position in respect to medical men and medicines generally understood, and thus save hundreds the trouble of writing to ask about this or that one? If it would do any good, we would keep a statement standing and print it month after month, but we fear it would not meet the case. We have stated again and again that we have no acquaintance with, or personal knowledge of, any advertising doctor, and that we would not employ one of them or advise any one else to do so, yet in the face of this, we get scores of letters, asking if so and so is not an exception. We regard all secret medicines as wrong, and shall do all that we can to discourage their use, and we look upon the advertising of his own claims and cures by a "doctor" as in itself proof that he has no proper standing in the medical profession. We should be very glad if our friends would remember this so frequently repeated declaration, for we have no time to answer individual inquiries on these points.

Ferrets Wanted.—"J. W.," Muscatine, Iowa. Enquiries such as yours would be unnecessary, if persons would look through the advertising columns for what they want. In this case it would be found that ferrets are kept for sale by N. Guilbert, Gwynedd, Pa.

The Currant Worm.—Powdered White Hellebore is, as we have frequently stated, a complete and thorough exterminator of the currant worm; it may be dusted over the leaves when the dew is on, or may be stirred in water and applied with a syringe. Another remedy comes to us from George Cruikshanks, gardener to J. C. Whitin, Esq., Whitinsville, Mass., which may be useful to those who cannot readily get the White Hellebore, or may not like to use it. Mr. C. mixes 5 lbs. whale oil soap with one quart of kerosene; when thoroughly mixed, he gradually adds about 5 gallons of boiling water, stirring to dissolve the soap and incorporate the kerosene. When this is done, add 25 gallons of water and apply with a syringe. It should be applied early on a sunny day, so that the liquid may dry upon the leaves. Mr. C. states that three applications have never failed to effectually destroy the pests.

Basket Items continued on page 233.

Thorough-bred and Grade Jerseys for Farmers.

BY THOMAS FITCH, NEW LONDON, CONN.

My experience for many years in breeding Jersey stock and crossing thoroughbreds with other breeds, may interest some of your readers, particularly the dairymen with whom butter-making is the principal business. My first purchase of Jerseys was made from the importation and breeding of the late John A. Taintor, of Hartford, Conn, who was, I think, the first to visit the islands in the British Channel, and to select in person, and import into this State, a herd of Jerseys. He was remarkably fortunate in his selections, for few if any of the later importations, down to the present time, have equaled or even approached the quality of his stock for form, beauty, or the production of milk, cream, and butter. Solid colors and black points, squirrel greys, or silver greys, light fawns or dark fawns, or other fashionable marks or colors had then as little to do with the *real value* of a Jersey cow, as it has to-day; or as the dark or light complexion has to do with an Anglo-Saxon's brains. A good Jersey cow, thorough-bred, and well bred at that, one that gave say 12 quarts of milk per day on common food (not steamed), and made 12 lbs. of butter per week, sold then for about $100. I have bred many thorough-bred Jerseys, and hundreds of grades; but comparatively few of my thorough-breds have given more than 12 quarts of milk per day, and I have the credit of breeding some of the most celebrated milkers and butter-makers now in this country; among them the following well known names: "Palestine 3d," "Maggie Mitchel," "Fleetfoot," "Flora," "Buff," and many more that I can name, all are the direct descendants of Mr. John A. Taintor's stock, some of them having given as high as 22 quarts of milk, and made more than 2 lbs. of butter per day, measured and weighed. I have crossed the Jersey bull with nearly all the known breeds of cows, Ayrshires, Natives, Short-horns, Dutch, the "sacred cow," and the Devons, and it is an excellent cross with any and all breeds for the dairy. I have never yet found a half-blood Jersey cow that did not yield a richer quality of milk than her dam. One peculiarity of the cross is this: wherever the Jersey bull serves, he transmits the rich quality of the milk to the grade he gets.

The thorough-bred Jersey cows, as a rule, have small teats and udders, small bodies, and tender, delicate constitutions; they are not so hardy, or so easily kept as Ayrshires or natives, but the grades have good sized teats, and capacious udders; are hardy, easily kept, and the quantity of the milk is increased. The grade is, in fact, worth more money to the farmer than the pure Jersey, for actual production, and all purposes except breeding thoroughbreds. The great value of Jersey stock to the country, is, for dairymen, especially butter-makers, who, by crossing thorough-bred bulls upon their common cows of all the mixed bloods, can select the heifer calves from their best milkers, and raise them to take the place of the present cows, and then again cross the pure bull with the half-bloods. When these herds are three-quarter Jersey, their yield of butter will doubtless be one-third more in quantity, of a much better quality, in color, firmness, and flavor, and worth 50 per cent more than at present. Who can estimate in dollars and cents what may be gained in the next few years, by the farmers following this course, with a slight outlay of money in thorough-bred Jersey bulls?

[A portrait of Mr. Fitch's cow "Palestine 3d," was given in the *American Agriculturist* of Nov., 1875. ED.]

Paris Green—Buying, Using, Keeping.

Those who would cultivate potatoes, must at the same time destroy the Colorado beetle, now generally called "the potato bug." While small patches may be kept clear by hand-picking and brushing off and catching, the only practical method thus far found with large crops, is to use Paris green. The beetle will no doubt visit the few far eastern localities that have heretofore been exempt, and for the benefit of inquirers from these and other places, we recapitulate what has been said in former years. In buying Paris green, get the *pure*. Manufacturers openly claim to make four or five qualities. It is folly to pay them for adulterating it. The pure retails at from 40 to 50 cts. a pound. It may be applied dry or mixed with water. If dry, mix one part of pure green with 20 parts of flour. Do not mix with the hands. Mix thoroughly. Contrive some kind of a sifter, like a dredging box, any tinman can make one, which can be attached to a long handle. Always keep to the windward in applying it, and do not breathe the dust. It takes but a slight, but evenly diffused dusting. In applying with water, recollect that it is not soluble; it is only diffused in the water; it is heavy, and will soon settle

if the liquid is not frequently stirred. Use a tablespoonful to a pailful of water. It may be applied by means of a watering-pot, a syringe, of which there are various kinds sold at the implement and seed stores, a garden engine, or by means of a whisk of broom-corn. It kills the perfect insects and larvæ or grubs, but does not kill the eggs. Watch the vines, and if a new crop has hatched out, renew the application. Insist that your neighbors on all sides shall kill the insects also, else later in the season they will keep you supplied. Paris green is a most virulent and *Deadly Poison*, and should be kept and used as such. Keep the stock of poison where no one else, by accident or design, can get at it. Keep the utensils with which it is applied, where they cannot be got at to be used for any other purpose until they are thoroughly cleaned. Use care and common sense, and do not forget the nature of the article you are dealing with. See to it *yourself*. Persons with cracks or sores upon their hands should not meddle with the poison. "Will it poison the potatoes, or the soil, and injure future crops?"—is a very frequent and proper question. We are warranted in saying decidedly, No. The investigations of Dr. Kedzie, of the Michigan Agricultural College, of Prof. Cook, of the N. J. Geological Survey, and of other chemists, show most conclusively and satisfactorily that no danger whatever can result from either of these causes. A member of that body of savans known as the "Immortals," a year or two "got up a scare" without knowing what had been done by others. F. W. Devoe & Co., cor. Fulton and William streets, N. Y., advertise that they make the pure article.

Forest Tree Planting.

FIFTH ARTICLE.

So far as planting itself goes, the season has passed, but there remains quite as important work, the caring for the trees already planted. As with orchard planting, many think that when they have procured and set the trees, they have done their duty, while the fact is that neither fruit or forest trees can be expected to thrive under neglect. Cattle and other animals, especially goats, are most destructive to young trees, and will soon render the plantation valueless. Where the law makes every man look out for his own animals, enforce the law. Upon its progress during the first few years the future growth and vigor of a tree will largely depend, hence young plantations, if there is no crop between the rows to require cultivation, should have the soil cultivated for the sake of the trees, and the earth should be stirred sufficiently to keep it loose and open, and to destroy weeds, and this should be done until the trees are large enough to shade the ground. Many think that the necessity for tree planting exists only in prairie countries, and that it is likely to be profitable only in the newer States, while the fact is that in the older States there is a vast area that can be more profitably devoted to forest trees than to any other use. Much of the land now under the plow does not pay for cultivation, and people are slowly waking up to the fact that it will pay them better to concentrate their labor upon the really arable land, and devote the rest to forest growing.

TREE PLANTING IN MASSACHUSETTS

is likely to receive an impetus from the prizes offered by that excellent association, the Massachusetts Society for the Promotion of Agriculture. The trustees offer $3,000 in prizes. *First*, for European Larch, the best plantation of not less than five acres, $1,000, and two other prizes of $600 and $400. In Barnstable, Dukes, and Nantucket Counties, Scotch or Corsican Pine or the two mixed, must be used instead of larch. The plantations must be upon land unfit for agricultural purposes, and must have had originally not less than 2,700 trees to the acre. *Second*, for the best plantation of American White Ash, not less than five acres, two prizes of $600 and $400. These should have had originally not less than 5,000 trees to the acre. Full particulars with regard to these prizes, which are to be awarded in the summer of 1887 for trees set in the spring of 1877, may be had upon application to the Secretary of the Society, E. A. Perkins, Jamaica Plain, Mass. The prospectus is accompanied by directions for planting, and for procuring young trees for the purpose, both at home and abroad; so thoroughly in earnest are these gentlemen, that one member of the Society, Mr. Francis Skinner, Brookline, Mass., offers to those who prefer to import larches and pines for this purpose, to transmit their orders and procure the passage of the trees through the Custom House, all free of charge. The Society publish, with the matter relating to these prizes, the excellent paper on Tree Planting, presented to the Mass. State Board of Agriculture, by Prof. C. S. Sargent, Director of the Botanic Garden and Arboretum of Harvard University, a contribution to the literature of arboriculture that has already been noticed in the *American Agriculturist*, and which should have a wide circulation, as it is full of interesting facts and statistics. We think that the Society has acted wisely in confining the prizes to so few trees, and the selection of the European Larch for poor soils, and the Ash for profitable cultivation upon better land, is judicious. There is no tree so little appreciated at its true value as our native White Ash. While it is one of the most beautiful of ornamental trees, its value as timber is great, and yearly increasing on account of the growing demand for export. We have nowhere seen the valuable qualities of this tree so well presented as in the paper by Prof. Sargent, and had marked it for insertion here, but the restrictions of space oblige us to postpone it to another month.

Bee Notes for June.

BY L. C. ROOT, MOHAWK, N. Y.

Those who increase their stocks by natural swarming, should now have their hives in readiness as bees usually swarm most freely, in our northern latitude, during the present month. Do not allow hives that are to be used for swarms to stand in the hot sun. After a swarm is hived, be sure to protect the hive from the hot sun, by a good roof or cover. When this is neglected swarms often desert the hive.

I am often asked about the proper time to put on boxes. This must be decided by the strength of the colony, and the yield of honey. Do not put them on until the bees will occupy them, nor delay them after that time.

Smoke, and how to use it.

The absolute necessity for the use of smoke in subduing bees has been acknowledged for many years, but the methods of applying it have varied. One of the most primitive methods was with the ordinary pipe and tobacco, thus furnishing an excuse for smoking. Another was, with a fire in an old pan of chips—blowing the smoke towards the bees. The use of a fumigator was a decided advance; this (figure 1) was a tin tube with a mouth-piece at one end, and a tapering tube at the other, with which smoke from tobacco, or cotton rags, could be directed to the point desired. Experience proves it to be injudicious to use tobacco smoke, as bees show the good sense to be offended by it. The smoke should be as mild, and used as sparingly, as possible, and yet accomplish the desired results. To this end, it is very generally agreed, that the best smoke is made by partially decayed wood, which will burn without blazing. The general practice is to cut it in pieces about two inches square, and one foot long, light one end of it, and blow the smoke from it to the bees. This practice has its disadvantages, as aside from the sparks that are often blown into the hive, the breath is also offensive to the bees, and has a tendency to enrage them. There is also danger from fire, as one often thinks the fire on the stick is thoroughly put out, when it is not, and I have known several very narrow escapes from serious conflagration.

Fig. 1.—FUMIGATOR.

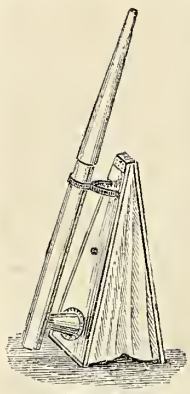


Fig. 2.
QUINBY SMOKER.

The most satisfactory method is that made public by the late M. Quinby. The subject received his most earnest attention, and the result is what is known as the "Quinby Smoker," (fig. 2,) which has been received with general favor. The decayed wood above mentioned is used in this, and the smoke is directed by use of the bellows to the exact point desired, and all danger of fire is avoided. When not in use, if set on the end, as shown in the cut, the valves will remain open, and afford sufficient draught to keep the wood lighted. To let it go out, lay it down on the side.

Fig. 3.—HONEY KNIFE.

Extractors.

I am asked to describe the extractor, and manner of using it. An extractor is a machine for removing the honey from the combs by centrifugal force, leaving the combs in good shape to return to the hive to be filled. It can only be made serviceable where movable combs are used. There are two general kinds of extractors; in one the can and all inside of it revolve. This will do the work, but has its disadvantages. The most popular forms are made with a reel revolving inside of a stationary can, with a crank and gearing giving it a motion of about 3 to 1.—Figure 3 represents this kind of an extractor, with the reel standing outside of the can. When made for four combs, the reel has four corner pieces, running from top to bottom at the corners, on which wire cloth is fastened,

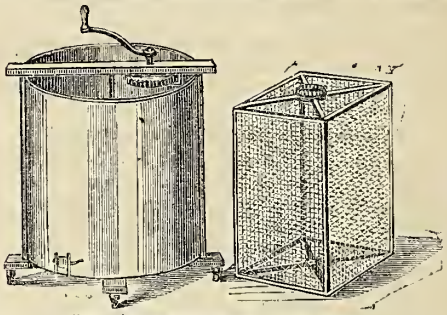


Fig. 4.—EXTRACTOR, AND REEL.

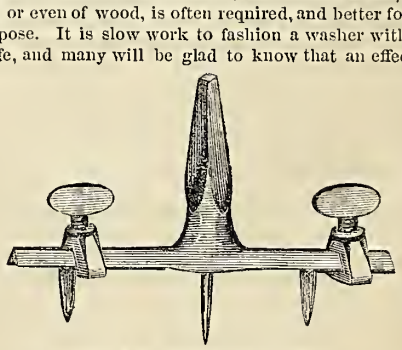
being drawn tight, which leaves a perfectly flat surface on each of the four sides. After cutting the capping from the cells with a knife made for the purpose, (fig. 4), the combs are placed inside of the reel with the open cells against the wire cloth. By revolving the reel rapidly, the honey will be thrown through the wire cloth into the can. The combs are then turned, and revolved again to throw the honey from the other side. The process is simple and practical. The honey is drawn from the can through a gate at the bottom.

Raising Queens.

J. H. Bell asks, "What would be the best plan to secure fully matured queens?" and "How can bees be made to commence early queen rearing?"—These questions may both receive one answer. Select the stock you desire to rear queens from, and remove the queen. Finding themselves queenless, they will immediately construct several queen cells. The number will usually depend upon the strength of the stock. If it is desired to save the extra queens, open the hive the 9th day after the queen is removed, and remove all the cells but one, and place them in separate hives, or nuclei for hatching.

A Washer Cutter.

Why a circular disk with a hole in the center, made of leather, metal, pasteboard, or other material, and placed under the head of a screw or bolt, or put between the moving parts of a machine, should be called a "washer," the makers of dictionaries do not inform us. Still one who has to use implements or machines, or even a common wagon or cart, has frequent need to use a washer, large or small. So common is the use of these, that those of metal are kept, of various sizes, in the hardware stores. But all washers are not of metal, and one of leather, rubber, or even of wood, is often required, and better for the purpose. It is slow work to fashion a washer with the knife, and many will be glad to know that an effective



TOOL FOR CUTTING WASHERS.

little tool for cutting them is now manufactured, by which they may be turned out very rapidly. This tool is shown in the engraving; it will fit any ordinary bit-stock, and consists of a shank to attach it to the bit-stock, and a horizontal arm. This arm has a center point, and carries two knives, which, by means of set screws, may be fixed at any desired distance from the center. One knife is so set that it will cut the hole in the center, while the other cuts the outside circle of the washer. It will cut washers from ½ inch to 6 inches diameter, with the center hole of any desired size. It may be used for cutting leather, rubber, cardboard, or even wood, if that is not over ⅛ inch thick. We have tried it upon leather and thin wood, and find it to work very satisfactorily, and are sure that it will prove a useful addition to every farmer's "kit" of tools. It is manufactured by Goodnow & Wightman, Boston, Mass.

A House Costing $2,900.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan of a suburban, or a country house, has

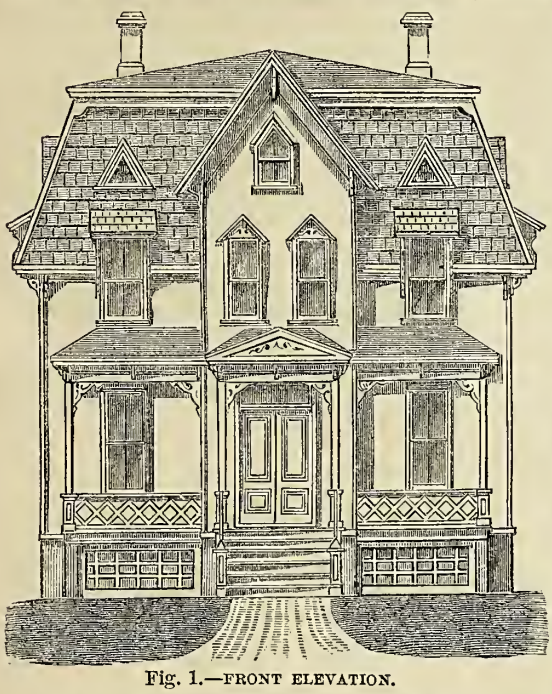


Fig. 1.—FRONT ELEVATION.

all the advantages of the square form—providing convenient, commodious interior apartments, and has a simple, expressive outside dress, that compares favorably with more pretentious, expensive dwellings....**Exterior,** (fig. 1.)—The outlines of the main building are rounded and compact, indicating completeness and solidity. The front tower-like projection is a central and distinctive feature, around which the other parts are symmetrically balanced. The Porch, and roofed balconies are simple and neat. The main roof, a new modification of the "Mansard roof," is a conspicuous part, giving an expression of strength and unity to the design. The main cornice has full projections, with neat solid trusses, and is separated into sections by the chamber windows, giving relief from the monotony and depressing effects usual in all continuous horizontal lines. All the Second story windows of the main building, have projecting hoods, appropriately interlaced with the principal roof work, securing pleasant shadows to those parts, and imparting a marked finish and variety. The Dormer Windows are triangular, and are placed immediately above those of the lower stories, prolonging the vertical lines of openings, to which they form a fitting termination....**First Story,** (fig. 3.)—Hight of

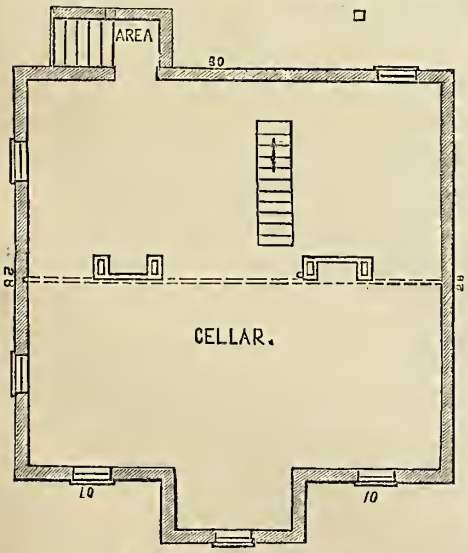


Fig. 2.—PLAN OF CELLAR.

ceiling 10 feet. The usual front hall is dispensed with, and the stairway is placed where it is more convenient, and accessible, and is not a conductor of cold drafts through the house. Many think it necessary to have stairways share with the parlors the most valuable and conspicuous position; they should more frequently be placed in some subordinate relation, without seeming to control the general arrangement. The Entrance from the front porch is through double doors to the vestibule, and thence to either the parlor or family-room. Side doors lead to the pleasant and shady front balconies. The Parlor and Family-room are of equal size, and may be used as one spacious apartment, by opening the sliding doors. The Dining-room is pleasantly situated, and opens into the family-room, rear entrance, and hall-way. It has one large bay window, and two plain ones, an open fire-place, and a dish or china closet, *c*. The Kitchen is isolated, relieving other rooms of its noise and odors, is convenient to the dining-room, cellar stairway, and rear entrance, through the rear lobby, and has an open fire-place, closet, and large pantry, range, boiler, sink, wash-tubs, and the necessary pipes for water. The Hall is central, accessible from the parlor, dining-room, and rear entrance, and is thoroughly lighted and ventilated by the window at the head of the stairs....**Second Story,** (fig. 4.)—Hight of ceiling 8 feet. This story contains a hall, four good sized chambers, with closets, and two windows to each. The Bath-room has bath-tub and seat. A Conservatory connects through sash doors, with the two front chambers....**Attic,** (fig. 5.)—Hight of ceiling 8 feet.

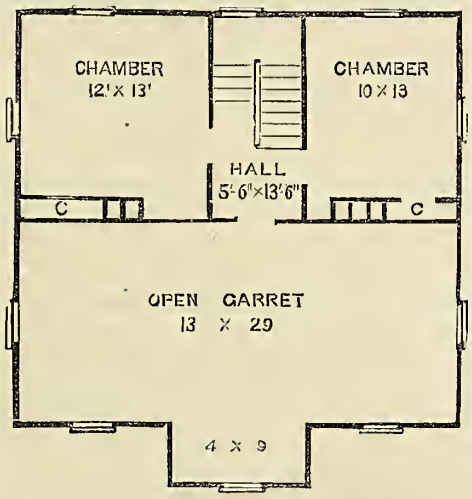


Fig. 5.—ATTIC.

The Stairs to this are placed immediately above those to the second story, are ceiled in, with a door at the bottom. The rear portion is finished on a line with the two chimneys, into two bedrooms and hall. The front portion is floored, but otherwise left unfinished as an open garret, valuable as a play-room for the children, a clothes drying room, and many other purposes....**Construction.**—The Foundation of hard brick, and good mortar, is shown by the *Cellar plan*, (fig. 2.)—It shows four feet above the grade in front, and if desirable, may show one half that hight in the rear. There is usually sufficient earth taken from the cellar excavations to give such desirable grade as shall turn off all water from the immediate grounds and walks. The Chimneys are also of hard brick, are independent of the foundations, and are carried up perfectly plumb to the roof, where they are finished with neat bases and caps. The central position of these chimneys is proof against cold air openings at their sides, and insures saving the heat radiated from them. It is impossible to prevent cracks from appearing along the sides of chimneys in frame buildings, and when these cracks communicate directly with the outside covering, they often admit much cold air.—The principal Frame is 20 ft. high, substantially constructed, as indicated by the upright section, (fig. 6.) The main plates are in line with the beams of the attic story, and the roof purlines are 8 feet above them. The side rafters are 12 feet long, fitted and spiked to the purlines

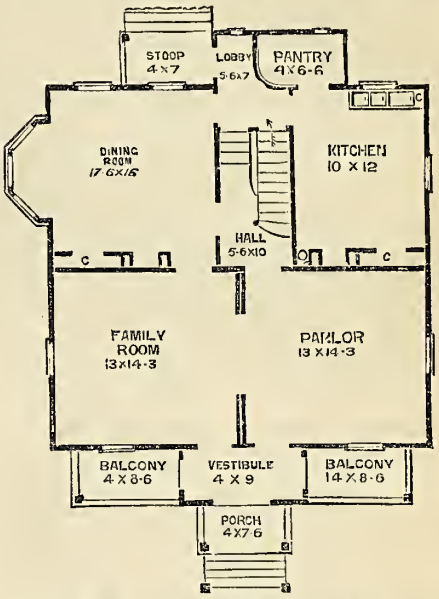


Fig. 3.—PLAN OF FIRST FLOOR.

and plates, with their lower ends extending 2½ feet down from the latter, in a continuous line. Rough brackets connecting the rafters with the upright frame work, forming the foundations or frame of the principal cornice. By this method of extending the rafters downward instead of upward, the desirable hight and proportion of roof are obtained. The exposed surfaces that require siding are reduced from the usual hight of 22½ feet, to 16 feet, and the cornices are more substantial and less complex. The siding, roof-boarding, slating, and trimming are done in the usual manner. The Gutters are laid in with the slate as described in May *American Agriculturist*, 1875. The Hoods and Dormer Windows have slate coverings, interlaced with the principal roof, with jolnings and flashings of sheet lead. The following estimate provides for the thorough completion of the building in an appropriate and substantial manner. **Estimate:**

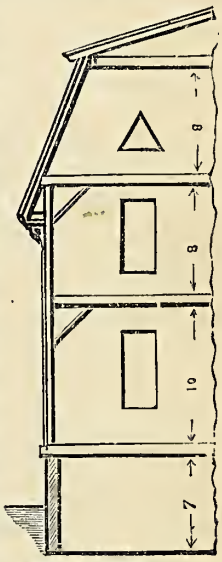


Fig. 6.—SECTION.

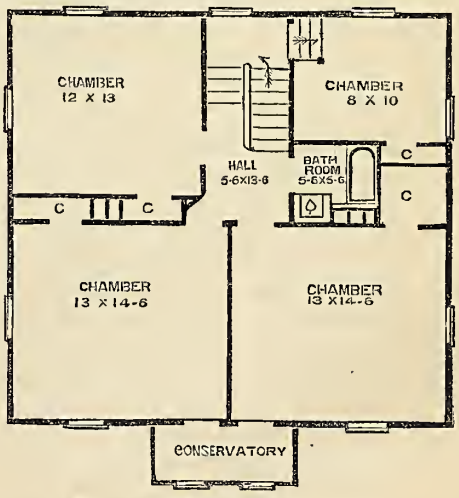


Fig. 4.—PLAN OF SECOND FLOOR.

82 yards Excavation, @ 20c. per yard	$ 16.40
16,000 Brick furnished and laid @ $12 ₩ 1,000	192.00
44 feet Stone Steps, Coping, etc., @ 30 c. per ft	13.20
750 yards Plastering, @ 35c. per yard	262.50

3,497 feet Timber, @ 2c. per ft.	69.94
viz. 1 Sill, 4x8 in. x 116 ft. long. 1 Perline, 3x7 in. x 96ft. long.	
1 Girt, 4x8 in. x 30 ft. long. 48 Beams, 2x8 in. x 14 ft. l'g.	
11 Posts 4x7 in. x 19 ft. long. 24 Beams, 2x8 in. x 18 ft. l'g.	
1 Tie, 4x6 in. x 146 ft. l'g. 27 Beams, 2x8 in. x 15. ft. l'g.	
1 Plate, 4x6 in. x 138 ft. long. 1 Stoop, 3x7 in. x 70 ft. long.	
30 Rafters, 3 x 4 x 13 ft., @ 16c. each	4.80
880 Wall Strips, @ 13c. each	49.40
200 Siding, 10 inch, @ 26c. each	52.00
Materials in Cornices and Corner Boards	50.00
261 Hemlock Roof Boards, @ 16c. each	41.76
19 squares of Slating, @ $9 ⅌ square	171.00
8 squares of Tinning, (I. C. Charcoal), @ $8 ⅌ square	61.00
200 feet Gutters and Leaders, @ 8c. ⅌ ft	20.00
300 Flooring, 9 inch x 1¼, @ 26c. each	78.00
200 pounds Felting, @ 3c. per lb	6.00
3 Stairs, complete	90.00
Porch, Balconies, and Stoops, complete	200.00
6 Cellar Windows, $36; 1 Bay Window, complete, $60	96.00
12 plain Windows, $144; 9 hooded do., complete, $135.	279.00
8 Dormer Windows, complete, @ $8 each	64.00
32 Doors, @ $9.50 each, $304; 7 Closets, complete, $14.	318.00
3 Marble Mantels, $60; 3 Marble Shelves, comp'e, $18.	78.00
Range and Plumbing, complete	200.00
Well from bath-room to roof, complete	15.00
Gas Pipes for 18 lights, complete	40.00
Bells and Speaking Tubes, complete	20.00
Finish of part of Attic, complete	60.00
Nails, $24; Cartage, average 1 mile, $25.	49.00
Carpenter's labor not included above	150.00
Painting, 2 coats, complete	150.00
Total Cost, complete	$2,900.00

Ogden Farm Papers.—No. 76.

BY GEORGE E. WARING, JR.

I have a letter from a Massachusetts hydraulic engineer, describing an improvement of a sort for which there is a large field along the Atlantic coast —namely, the dyking of 1,400 acres of salt-marsh, in Marshfield, on Cape Cod. The land can be drained six or seven feet deep; or at pleasure it can be completely flooded with fresh water, at least during the spring of the year. Whenever any of this land has been plowed and seeded with grass or grain, or cultivated with garden vegetables, the result has uniformly been strikingly good. In fact, the land seems to be everything that could be desired; but my correspondent goes on to say, "Not so, however, with the nature of mankind. Some half dozen represent about all who have hitherto undertaken to do any work upon this land; the rest stand by, and either doggedly persist that 'you can't grow anything on a salt-marsh,' or else they seem to think that grass, etc., ought to grow of itself, without any cultivation.

"Now, it evidently is no use to argue for the reclamation of our old salt and other marshes in general, so long as a tract of land already dyked out, perfectly drained as to the main, or general drainage, and composed of the best of soil, may be seen lying in this disreputable condition. I am not satisfied that some of the owners have cultivated their marsh land, and are doing so this year; nor should I be until the whole of this marsh is under some form of cultivation, and is put to some use. We want, and I am almost ashamed to say it—but have come to the conclusion slowly and against my will—we want twenty or thirty *foreigners* to settle on that land and to cultivate it; our native farmer, on the average, requires too long time to be educated into anything so new to him, although so old, as marsh drainage."

From my own knowledge of the character of this marsh, and from my observation of the cultivation of precisely similar land in Holland, I do not hesitate to say that any enterprising and skillful farmer (dairyman especially), who would take up a part of the Marshfield meadow, would have a surer prospect of ultimate success than in any other field that is known to me. For a year or two there might very well be some draw-back, but from the first the return should be at least tolerably good, and when this land is once brought into cultivation, it is quite sure to be as fertile as the best of the western prairies, and it has the great advantage of being close to the Boston market, where at least double the prairie price can readily be obtained for all dairy products. Such land as this, lying in the Beemster in North Holland, or along the dyked estuaries of Zealand, is producing year after year a return of $100 per acre—very largely in cheese that is sold in the Boston market.

Some months ago I published a description of Field's flush-tank, which I have recently adopted in connection with the outlet of my kitchen sink. It has now been six months in use. Being enclosed in a house, and packed around with leaves, it was never disturbed by frost. On one occasion, by carelessness, enough of the leaves were allowed to collect over the grate to prevent the water from entering the tank, and we were troubled with an overflow that leaked into the cellar. Very recently it ceased to act, and we found that the grease, which had congealed to a thickness of quite an inch, all around the interior of the tank had begun to flake off, and some bits of this got in the top of the siphon and choked it. This was easily remedied, and after the extended experience we have had with it, I am prepared to endorse, fully, all of my theoretical recommendation of it with the simple addition of the advice, that as often as once in two or three months the inside be scrubbed out with an old broom, and the grease lumps be skimmed off and removed. We find, on examination, that the outlet drain beyond the tank is kept perfectly clean, and the water is distributed through the irrigating channels much more evenly and regularly than ever before, with the very great advantage that the whole flow occupies less than half an hour at intervals of a day or more, during which time the soil can become perfectly aerated. The growth of the grass near the irrigating drains shows that the influence of the liquid is more widely felt, and there is less indication of too great rankness.

I have to report an item of experience of a decidedly unfavorable character. Two of my very best cows—animals that I value at $1,000 each—are, one of them a full sister and the other a half sister to my leading bull, whose qualities are not inferior to their own. Guided by the successful experience of in-breeding, that has been so often reported, I bred both of these cows to their brother, and as they seemed in perfectly good condition up to the time of calving I promised myself a satisfactory and profitable result, but the event proved that "The best laid plans o' mice an' men, etc." So far as we could judge, there seemed nothing in the character of either of the calves that indicated a malformation or unnatural development, but both were so displaced that natural parturition was impossible, and both the calves were lost.

One swallow does not make a summer, nor do two failures disprove a theory, but it will take more courage than mine to try again the experiment of breeding brothers and sisters among my cattle. The breeding of father and daughter, and even of grandfather and grand-daughter, is often successful, but I shall act, in my own practice, upon the theory that it is safer to avoid any risk that may come of in-breeding. In establishing a new family for the perpetuation of unusually good qualities, the closest in-breeding is often necessary, and is sometimes successful, but in a race like the Jerseys, where there is no difficulty in finding thoroughly good bulls not related to our cows, I should need some unusual inducement to lead me to violate what is considered a "natural" law.

I wrote, last fall, of a plan that had been adopted for pumping the liquid from the manure cellar into a tank, (by windmill power), and using it to irrigate grass land. I suggested then the use of a self-acting siphon, on the principle of Field's flush tank. On consideration I gave up this feature, for the tank being very large, 20x10x6, it is very easy to keep a sufficient watch over it, and stop the pump before there is danger of overflowing, and to let out the flood through a drain at the bottom of the tank. We find, after due experience, that with an average wind an 8-foot mill, working a 2-inch pump, fills the tank (10 ft. lift) in about 24 hours, and that, with land sloping 2 ft. in 100, we can, with very little attention to the direction of the flow after it leaves the drain, thrown this liquid over a broad area of ground, and thus diffuse in the most advantageous way a flow, which, if it dribbled away in a small stream, would only serve to create a rank and worthless growth of grass on a few rods of land.

Mr. Franklin Sherman, of Fairfax Co., Va., questions the wisdom of my recommendation to use western corn for fodder, and sends me seed, (which I shall try), of a tall growing southern sweet corn, which suckers vigorously, makes a large amount of fodder, and contains much more saccharine matter than any of the ordinary field corns. The same report of this corn is made by Dr. Quimby, of Loudon Co., who also says that the seed of this variety is to be obtained at very moderate rates, from various parts of the Piedmont regions of Virginia, and of the Shenandoah Valley. I have no question from the accounts these gentlemen give, that this corn is a decided improvement over the western variety, provided it will grow in more northern climates with sufficient luxuriance. It would certainly be worth while for the very large number of farmers who now practice soiling, in whole or in part, to plant a portion of their fodder-corn fields with this variety, and so give it a sufficient practical test.

The Jersey Cattle Club held its Annual Meeting in April, and appropriated $1,000 as prizes for the best Jersey cattle, to be shown at the Centennial Exhibition next September. The animals must be recorded in the Club's Register, or in the Herd Book of the Island of Jersey; the judges are to be members of the Club, or of the Jersey Society; and the cattle are to be judged by the Club's "Scale of Points."

Our Society has been very severely criticised and censured by those who have not succeeded in procuring the admission to the Register of cattle whose pedigrees cannot be made to conform to our rules, and some of the most influential papers published in the stock breeders' interest do not tire of accusing us of selfish motives, calling us a "Ring," etc. As it would be impossible for me to reply to all these accusations in the *papers* in which they appear, and as I have no other medium than the *American Agriculturist*—as also my position of Secretary of the Jersey Cattle Club, necessarily connects my name somewhat with all charges brought against it, I desire to say, once for all:—that with a thorough knowledge of all the Club's affairs, and with a very clear understanding of the spirit in which all of its regulations have been established, I am confident that the individual interests of its members, as opposed to those of other breeders, has never in a single instance had influence in deciding our regulations for recording pedigrees. The Club makes no money except by its initiation fees, the sale of its publications, and the charge for entering cattle. All of the money that it does make is scrupulously devoted to the cost of bringing out its publications and to the general promotion of the interests of all breeders,—as instanced in the above appropriation for Centennial prizes. There is no question that some of our regulations work a hardship to breeders who have not known sufficiently early what the requirements would be, and to certain importers who steadily disregard our regulations concerning the entry of the pedigrees of imported animals. These latter suffer from their own conscious fault, and so far as others are concerned, the hardship has fallen, at least as hardly, on members of the Club as on those who are not members. We are constantly receiving new members, who believe that it will be for their ultimate interest to sell off all of their animals which cannot be recorded, and start afresh with animals that are in the literal line of registration. Those who insist that we shall still further postpone the operation of our rules in order to enable them to record animals now excluded, should bear in mind that such action would be especially hard on those who have accepted the suggestion and sold for a low price precisely similar animals, for no other reason than that they cannot be registered.

Mr. John Soden, of Otsego Co., N. Y., bought two Jersey cows, which cost in his stable a little over $500, (they had been sold at this price by a member of the Club because they could not be registered.) They were bought in March, 1875, one of them calving at that time, and the other not until the 19th of May. One was due to calve, this year, the 21st of April, and the other the 5th of May. One was eight years old, and one five years old. Their product during the year was 330 lbs. for the five-year-old, and 432 lbs. for the eight-year-old. I give these facts as they are published over Mr. Soden's name. The cattle must certainly have had

very excellent care, although he says that they received while in pasture only five pounds of ship-stuff each, and during winter, potatoes, wheat-bran, and corn and oat-meal.

J. S. Elder, Darlington, Pa., sends a sketch of a field in which there is a depression that holds surface water. Under a part of the field there is an old coal gangway, twelve feet below the surface. He asks whether the continuing of this gangway under the depression will drain it. As I understand, the basin is always, or often more or less filled with water. If this is the case, the driving of the underground channel would not alone be sufficient, because the water standing on the surface has doubtless, under the action of the winds, puddled the soil below it so as to form a tight basin. The gangway may very well be used as an outlet for this drainage, but it would at least be necessary to dig a hole from the surface down to the gangway, and to fill this hole with loose stone gravel, or other porous material, that would readily carry away any surface water accumulating. Were this not sufficient for the complete drying of the soil, the same hole can be used as an outlet for the necessary under-drains. It is possible, as coal seams are more or less open, that by simply making the hole suggested well into the coal, the natural porosity of this would furnish a sufficient outlet for the water, saving the cost of the further gangway driving suggested.

Wild and Mongrel Geese.

The Wild Goose (*Branta Canadensis*) which we are accustomed to see on its passage every spring and fall, is as well worthy of domestication as any variety of water fowl that we have upon our farms. To the great majority of our people they are only known as they see them in flight. They have never seen them in the poultry yard, and never enjoyed them as a delicacy upon the table. In a few districts their value has been discovered, both for ornament and for use, and the raising of wild geese has become a regular and profitable business. They are more generally raised in Rhode Island, about the shores of Narragansett Bay, and in Eastern Connecticut, near the Sound, than in any other district with which we are acquainted. The bird is thus described by naturalists: "The head, two-thirds of the neck, the greater quills, the rump and tail are pitch black; the back and wings broccoli-brown, edged with wood-brown; the base of the neck anteriorly, and the under plumage generally, brownish-gray; a few white feathers are scattered about the eye, and a white cravat of a kidney shape forms a conspicuous mark on the throat; upper and under tail coverts, pure white; bill and feet black." They do not walk so gracefully as the common goose, but are entirely at home on the water, and are beautiful objects upon any pond or stream in cultivated grounds. They make a pleasing contrast with white swans, common geese, or ducks, upon any lawn or woodland park. To the farmer they are of chief value for their flesh, and for crossing with other varieties to raise mongrel geese, which are an article of luxury in city markets, and command very high prices. The wild goose has been so little domesticated that there has been no departure, in the color of the plumage, or habits, from the original type. They are strictly monogamous, and the old gander, when mated with the goose for the season, rarely leaves her, unless it be for some former mate, who unexpectedly returns to him. In breeding the pure birds, it is usual to have not more than two or three pairs upon the same premises, and if each pair could have a separate breeding place, it would be likely to save quarreling among ganders, and disturbance among the goslings. The breeding birds are pinioned at the first joint of the wing, to prevent them from flying, an operation is usually performed while they are young. When first brought to a new location, they should be kept in a pen or hurdle near the spot where they are to breed. They will soon become accustomed to their keeper, and if regularly supplied with food, will give no more trouble than common geese. Abundant feeding, especially during the first season, is essential to the highest success. The young are strong and hardy, and soon learn to shift for themselves. The wild birds are not nearly so prolific as the tame varieties. Each goose lays six or seven eggs at the first litter, and if these are set under other birds, she will lay a second time. The birds increase in size for several years, and their weight will depend very much upon the abundance of their food.

Mongrel Geese, with which the markets of large cities are scantily supplied, are the delight of epicures; they are a cross of the wild goose upon some domestic variety. The mongrel goose is usually larger than either parent, and the flesh is held in the highest esteem, either because of its excellent flavor, or of its very high price. The early birds are most desirable, as they can be marketed in August at the watering places at the highest price. The wild gander is usually mated with a domestic goose, because she will produce two or three times as many eggs as a wild goose—thirty and forty eggs are secured by the skillful poultryman, and are hatched under hens or other geese. The young birds are hardy, and easily raised. They should have a good pasture, with a pond or brook, and be regularly and bountifully fed. The object is to secure early maturity, and sell while there is the greatest demand. The business pays well.

The use of Machinery.—The use of machinery upon the farm is doubly beneficial. It not only reduces the labor, lessens the cost of products, saves time, and enables a larger surface to be cultivated, but it actually necessitates better and more careful work. To plant corn with a drill successfully, it is necessary that the sod be well turned over and covered, and no trash left upon the surface to interfere with the regular dropping of the seed; nor must loose stones be left in the way. It is the same with all other machinery, and this indirect benefit is not the least by any means of those that we gain by the use of farm machines.

Improvement in Sheep.—A marked improvement is noticeable in the quality of sheep which come to the markets. Whole flocks of sheep, which will average over 100 lbs., may now be seen in the pens in place of poor animals weighing but 60 to 70 lbs. This is the effect of the rapid introduction of pure bred sheep of different varieties, but chiefly the Cotswold. In good time American mutton will be equal to that of England; it is nearly so now in weight of carcass, and will be so in quality and flavor of the meat, if farmers will raise roots upon which to feed their sheep. One acre of turnips or mangels is equal to ten of grass for fodder, and when fed with straw, and helped out with a little bran or oil-cake, roots are certainly the cheapest feed that can be produced.

Science Applied to Farming.—XVIII.

BY PROF. W. O. ATWATER.

A Correction—Nitrogen, How Supplied to Soils and Crops, and How Lost—Need of More Investigation—Fraud in Fertilizers.

In Table 31 of last month, a grievous error occurred, which was not discovered until the edition was printed In part *A* the figures of the columns "Mineral Matters" and "Nitrogen," were, with the exception of the first and last, transposed, so as to bring the figures for "Nitrogen" under "Mineral Matters," and vice versa. The surest way to correct so important a mistake, is to reprint the table entire, as is here done. In the calculation of the materials taken from the soil by a ton of hay, the proof-reader changed the figures to correspond with the transposed table. They should be, nitrogen $28\frac{2}{5}$ lbs., potash $26\frac{2}{5}$ lbs., lime $17\frac{1}{5}$ lbs., phosphoric acid $8\frac{1}{5}$ lbs., and so on, as they were originally written by myself.

Nitrogen in Soils and Plants.

In the table the nitrogen of the plants is stated to be "derived mostly from the soil." This point deserves more detailed explanation, and I know no way that this can be so well given as in the following language, which will be valued as coming from our first authority on these matters in this country. Prof. S. W. Johnson, in a lecture on "Guiding Ideas in the Use of Fertilizers," published in the Report of Conn. Board of Agriculture for 1873, says: "We do not know positively, as yet, all the processes or arrangements by which nitrogen is made accessible to our crops. We have got a great deal of valuable knowledge, but there is still much to be learned. The atmosphere contains an immense store of nitrogen gas—four-fifths of its bulk and weight—but this *free* nitrogen is, so far as our present information enables us to decide, of no use as food to vegetation directly. It is only capable of feeding plants after it has been brought into combination with other elements as a nitrate*, or as ammonia. The atmosphere will furnish a limited but variable supply of these compounds, enough to be of essential service to well developed vegetation, having great absorbent surface of leaf and root, but not enough to bring annual plants to great development, so that agricultural plants, if planted in a soil destitute of available nitrogen-compounds, can never make a crop without the help of manure containing suitable nitrogen compounds.

"Nitrogen is the most costly element of our ordinary fertilizers, because it is the most generally and strikingly useful, and because it is the most difficult to obtain, or in other words, the demand is great and the supply small.

"The soil, if it contains little nitrogen, must be enriched by that element; if it contains abundance, it is obviously not needful to add more. By natural processes, the soil is constantly losing and gaining nitrogen, or is liable to such loss and gain, and these changes are intensified under the artificial conditions of agricultural practice. Nitrogen enters the soil from the atmosphere, by direct absorption of ammonia, especially when moisture condenses in it as happens in the night time, and loses ammonia again, or may lose it, as the water exhales. The rain that falls upon the earth brings both ammonia and nitrates in varying quantity, equivalent to from two to twenty-one pounds of nitrogen [to the acre], per annum, in the dozen instances where chemists have taken the immense trouble necessary to ascertain its quantity for an entire year. On the other hand, the nitrates, and ammonia after being oxidized to nitrates, wash from the soil in the outflowing water, and are lost in the streams. Again, the soil itself is not passive to nitrogen, but on the one hand appears to be able to render a portion of the available nitrogen inert, and on the other, to assimilate nitrogen from the air, and make it available to plants. But with regard to these processes we are very much in the dark."

There is another source of loss of nitrogen which Prof. Johnson does not speak of just here, and upon which new light has been thrown by experiments since the above was written. The compounds of nitrogen which are so precious as plant food, are, to greater or less extent, broken up in the soil, and the nitrogen let loose as *free* nitrogen, which is useless to vegetation.

Prof. Johnson continues: "Nitrogen then is somewhat exceptional among the elements of fertilizers. It comes to our soil in an unseen atmospheric stream, sometimes larger and sometimes smaller, but always so small that the current quantity is not adequate for the current crop. It is always wasting, or liable to waste, and it wastes the more the greater the volume of rain-water which our soil is unable to retain in its pores, but permits to leach through and away. The natural accessions of nitrogen to the land, though not enough for a grain or a hoed crop, while that crop is growing, are yet enough to help it essentially when its absorbent surface of leaf and root has become large. And by judicious alternations of the large-surfaced and deep-rooted plants of the perennial class, or of perennial habit, like clover, we can save and store

* It will be remembered that ammonia and nitric acid are compounds of nitrogen, and that compounds of nitric acid with bases as ammonia, lime, etc., are called nitrates.

up in the soil, nitrogen of atmospheric manurings, to use for those crops which, like grain and tobacco, are active consumers of this element either of themselves or by the culture they require."

Loss and Gain of Nitrogen.

In brief, nitrogen is the most valuable because the most scarce of all the ingredients of plant food, the immense stores of *free* nitrogen in the air are not available to plants because they can use it only when combined with other substances. But plants do seem to have the power to take some nitrogen compounds from the air by their leaves; clover and like large leaved plants seem to absorb more in this way than grain crops. The main supply of nitrogen to plants must come from the soil, and, to be useful to the plants, this nitrogen must be in available forms. In vegetable remains and manures it is in more or less available forms, and is gradually made more available. This change is facilitated by right manuring and tillage. At the same time the soil is continually gaining more or less nitrogen from the atmosphere, and is losing more or less by escape in a free state, entering into unavailable combinations, or, especially, by leaching off in drainage water."

TABLE 31. (*Corrected.*)

For Calculating the Exhaustion of Soils by Crops and Enriching by Manures, Average quantities of Water, Organic Matter, Ash, Nitrogen in Organic Matter and Potash, Lime, Phosphoric Acid, and other Ingredients in Ash. of Fresh (Green) and Air-dry Materials.

A.—PLANTS.

VEGETABLE MATERIALS. 1,000 LBS. CONTAIN	Water, Derived thro' Soil from Air.*	Organic Matter, Derived mostly from atmosphere.*	Mineral Matter or Ash, Derived wholly from Soil.	Nitrogen in Organic Matter, Derived mostly from Soil.*	INGREDIENTS OF ASH. Potash.	Soda.	Lime.	Magnesia.	Phosphoric Acid.	Sulphuric Acid.	Silica.
GRAIN AND STRAW.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs	lbs.
Wheat, grain	143	840.1	16.9	20.8	5.3	0.4	0.6	2.0	7.9	0.1	0.4
Wheat, straw	141	855.8	46.1	3.2	6 3	0.6	2.7	1.1	2.2	1.1	31.2
Rye, grain	145	837.4	17.9	17.6	5.6	0.3	0.5	2.1	8.4	0.2	0.4
Rye, straw	154	843.6	40.5	2.4	7.8	0.9	3.5	1.1	2.1	1.1	24.9
Oats, grain	140	840 8	27.0	19.2	4.4	0.6	1.0	1.9	6.2	0.4	12.0
Oats, straw	141	855.0	40.4	4.0	8.9	1.2	3.6	1.6	1.9	1.3	19.6
Indian Corn, grain	136	848.0	13.0	16.0	3.7	0.2	0.3	2.0	5.9	0.2	0.2
do. stalks and leaves	140	855.2	41.9	4.8	9.6	6.1	4.0	2.6	5.3	1.2	11.7
Buckwheat, grain	141	844.6	11.8	11.4	2.7	0.7	0.5	1.5	5.7	0.2	0.1
Buckwheat, straw	160	827.0	51.7	13 0	24.2	1.1	9.5	1.9	6.1	2.7	2.9
Beans	141	818 2	30.7	40.8	13.1	0.4	1.5	2.2	11.9	0.8	0.2
Bean straw	180	803.7	43.9	16.3	18.5	1.1	9.8	3.3	3.2	1.6	3.2
Peas	138	826.2	23.5	35.8	9.8	0.2	1.2	1.9	8.6	0.8	0.2
Pea straw	143	846.6	44.0	10.4	10.1	1.8	16.2	3.5	3.5	2.7	3.0
HAY.											
Average Meadow Hay	141	841.8	51.5	14.2	13.2	2.3	8.6	3.3	4.1	2.4	13.9
Timothy Hay	143	838.7	62.1	18.3	20.4	1.5	4.5	1.9	7.2	1.8	22.1
Red Clover Hay	167	811.7	56.9	21.3	18.3	1.2	20.0	6.1	5.6	1.7	1.4
Swedish Clover Hay	167	808.5	39.7	24.5	11.0	1.2	13.5	5.0	4.0	1.6	1.6
Lucerne (Alfalfa)	167	820.0	62.1	23.0	15.3	1.3	26.2	3.3	5.5	3.7	3.8
GREEN CROPS.											
Young Grass	800	194.4	20.7	5.6	11.6	0.4	2.2	0.6	2.2	0.3	2.1
Timothy Grass	700	294.6	21.6	5.4	7.4	0.5	1.6	0.7	2.5	0.6	7.7
Fodder Rye	700	295.7	16.3	4 3	6.3	0.1	1.2	0.5	2.4	0.2	5.2
Fodder Corn	800	196.8	12.0	3.2	4.3	0.5	1.6	1.4	1.3	0.4	1.7
Red Clover in blossom	800	194.7	13.7	5.3	4.4	0.3	4.8	1.5	1.4	0.4	0.3
ROOTS (tubers) & TOPS.											
Potatoes, tubers	750	246.8	9.4	3.2	5.7	0.2	0.2	0.4	1.6	0.6	0.2
do. vines, nearly ripe	770	225.1	19.7	4.9	4.3	0.4	6.4	3.3	1.6	1.3	0.9
Turnips, roots	909	89.2	7.3	1.8	3.3	0.7	0.8	0.3	0.9	0.8	0.1
Turnips, tops	898	99.0	11.9	3.0	2.8	1.1	3.9	0.5	0.9	1 1	0.5
Sugar Beets, roots	816	182.4	7.1	1.6	3.9	0.7	0.4	0.5	0.8	0.3	0.1
Sugar Beets, tops	897	81.9	18.1	3.0	2.8	2.3	0.9	1.1	1.2	0.7	0.2
Carrots, roots	860	137.9	7.8	2.1	2.8	1.7	0.9	0.4	1.0	0.5	0.2
Carrots, tops	808	186.9	26.0	5.1	2.9	5.2	8.5	0.9	1.2	2.0	2.9
Hops, entire plant	140	778.6	81.4	?	20.1	2.8	18.1	6.4	7.5	3.7	16.4
Hops, the cones	120	813.2	66.8	?	23.0	1.4	11.1	3.7	11 2	2.4	11.1
Tobacco, leaves	180	769.0	151.0	46.0	30.3	5.1	62.8	17.7	4.8	5.8	13.5

* See explanations in present and previous articles.

B.—MANURES.

FERTILIZING MATERIALS. 1,000 (or 100) LBS. CONTAIN.	Water.	Organic Matter.	Ash.	Nitrogen (in Organic Matter.)	INGREDIENTS OF ASH. Potash.	Soda.	Lime.	Magnesia.	Phosphoric Acid.	Sulphuric Acid.	Silica and Sand.	Chlorine and Fluorine.
ANIMAL EXCREMENTS. 1,000 LBS. CONTAIN	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Stable manure, fresh	710	246	44.1	4.5	5.2	1.5	5.7	1.4	2.1	1.2	12.5	1.5
do. moderately rotted	750	192	58.0	5.0	6.3	1.9	7.0	1.8	2.6	1.6	16.8	1.9
do. thoroughly rotted	790	145	65.0	5.3	5.0	1.3	8.8	1.8	3.0	1.3	17.0	1.6
Dungheap liquor	982	7	10.7	1.5	4.9	1.0	0.3	0.4	0.1	0.7	0.2	1.2
Fæces, fresh	772	198	29.9	10.0	2.5	1.6	6.2	3.6	10.9	0.8	1.9	0.4
Urine, human, fresh	963	24	13.5	6.0	2.0	4.6	0.2	0.2	1.7	0.4	..	5.6
Night soil, fresh	935	51	16.0	7.0	2.1	3.8	0.9	0.6	2.6	0.5	0.2	4.0
COMMERCIAL FERTILIZERS. 100 LBS. CONTAIN												
Peruvian guano	14.8	51.4	35.8	13.0	2.3	1.4	11.0	1.2	13.0	1.0	1.7	1.3
Dried blood	14.0	79.0	7.0	11.7	0.7	0.6	0.7	0.1	1.0	0.4	2.1	0.4
PHOSPHATES.												
Bone-meal, average	6.0	33.3	60.7	3.8	0.2	0.3	31.3	1.0	23.2	0.1	3.5	0.3
Bone-meal, from solid parts	5.0	31.5	63.5	3.5	0.1	0.2	33.0	1.0	25.2	0.1	3.0	0.2
do. from porous parts	7.0	37.3	55.7	4.0	0.2	0.3	29.0	1.0	20.0	0.1	3.5	0.2
Bone black, fresh	6.0	10.0	84.0	1.0	0.1	0.3	43.0	1.1	32.0	0.4	5.0	..
Bone black, spent	10.0	6.0	84.0	0.5	0.1	0.2	37.0	1.1	26.0	0.4	15.0	..
Bone ash	6.0	3.0	91.0	..	0.3	0.6	46.0	1.2	35.4	0.4	6.5	..
Baker guano	10.0	9.0	81.0	0.5	0.2	1.2	41.5	1.5	34.8	1.5	0.8	0.3
Jarvis guano	11.8	8.2	80.0	0.4	0.4	0.3	39.1	0.5	20.6	18.0	0.5	0.2
Navassa Phosphates	2.6	5.4	92.0	0.1	..	..	37.5	0.6	33.2	0.5	5.0	0.1
SUPERPHOSPHATES.												
Rectified Peruvian guano	16.0	41.9	42.1	10.5	2.0	1.2	9.5	1.0	10.5	15.0	1.5	1.1
Baker g'no, superp'sphated	15.0	6.2	78.8	0.3	0.1	0.8	25.9	0.9	21.8	28.5	0.9	0.2
Navassa "	15.0	2.5	82.5	..	..	?	17.0	0.3	15.4	19.5	2.3	?
Boneblack "	5.0	8.0	77.0	0.3	..	0.1	25.0	0.7	16.2	21.0	9.3	..
Bone-meal "	13.0	23.8	63.2	2.6	0.1	0.2	22.4	0.7	16.6	19.5	2.5	0.2
MISCELLANEOUS.												
Sulphate of Ammonia	4.0	..	..	20.0	..	..	0.5	..	..	58.0	3.0	1.4
Nitrate of Soda	2.6	..	..	15.5	..	35.0	0.2	..	..	0.7	1.5	1.7
Plaster	20.0	..	80.0	..	..	..	31.0	0.1	..	44.0	4.0	..
Gas-Lime	7.0	1.3	91.7	0.4	0.2	..	64.5	1.5	..	12.5	3.0	..
Sugar-house Scum	34.5	24.5	41.0	1.2	0.2	0.6	20.7	0.3	1.5	0.3	9.1	0.1
Ashes, Evergreen Trees	5.0	5.0	90.0	..	6.0	2.0	35.0	6.0	4.5	1.6	18.0	0.3
Ashes, Deciduous Trees	5.0	5.0	90.0	..	10.0	2.5	30.0	5.0	6.5	1.6	18.0	0.3
Leached Ashes	20.0	5.0	75.0	..	2.5	1.3	24.5	2.5	6.0	0.3	20.0	..
Peat Ashes	5.0	..	95.0	..	1.5	0.8	?	1.5	0.6	1.3	?	0.2
Anthracite Coal Ashes	5.0	5.0	90.0	..	0.1	0.1	?	3.0	0.1	5.0	?	..

Gain and Loss of Other Elements of Plant Food.

Prof. Johnson continues: "As to the other elements of plant food, lime, magnesia, potash, iron, sulphuric acid, phosphoric acid, and chlorine, we know that they belong to the soil, and while they may be removed from our fields in the crops, or may some of them wash out of the land in the drain water, they cannot return of themselves, but must be returned in the manure we apply, unless the overflow of some water-course may chance to bring them back. Of the elements just named, there are some which are especially liable to waste in drainage waters, or waste easily and rapidly, while others are practically fixed. Lime and sulphuric acid, next to nitrates, are the substances which water dissolves and removes most copiously from our fields."....After citing some analyses of drain waters, he continues: "Phosphoric acid and potash, it is noticed, are found in but the minutest quantities in these drain waters. We need not fear, then, that these substances are wasting from our lands unless indeed they are over-manured and under-retentive. But lime and sulphuric acid wash out more freely, and hence, probably, one reason of the wide-spread advantage of gypsum as a fertilizer; it must be constantly applied to make up the constant loss of its elements."

Need of More of the Knowledge that Comes from Investigation.

Nitrogen, phosphoric acid, potash, and the other ingredients of plant food, are very important things in agriculture. The farmers of the Eastern and Southern States have been buying, or will buy this season, a great many thousands of tons of artificial fertilizers. It is these ingredients that give such fertilizers their chief value. Nitrogen is one of the most important, and is costing the buyers all the way from 15 to 50 cents per pound in our ordinary fertilizers, and a good deal more in some fraudulent articles. Much of it is applied where it is needed, is used economically and brings the most profitable results. Much is ill-applied, and by wrong management will be lost. A great deal must be lost at best. But we need to learn how to obtain it at the lowest cost from home or from artificial supplies, how to employ it with the least waste, and how to realize the greatest product from its use. Most of the little definite knowledge we have on these points has come to us by aid of the same instrumentality that has told us of the existence of nitrogen, to wit, chemical experiment. What is true of nitrogen, is true of fertilizing materials generally. In proportion as we learn by accurate investigation how to obtain them cheapest and how to use them best, will farming become more profitable. To learn this we need men to make experiments, places for them to work, and means to work with. If the farmers of the country will make use of their immense influence to support agricultural schools and establish agricultural experiment stations, the much desired end can be accomplished.

Fraud in Fertilizers.

Last fall a farmer from this vicinity came into our laboratory with a sample of a fertilizer which himself and neighbors had tried last season, with very poor results. In due time it was analyzed, and proved to be an extremely poor article, in fact, a very evident fraud. To be more certain of its character, a second sample was obtained from a lot purchased by another farmer in the neighborhood, and analyzed with similar results. The story which the parties tell is about this. In the spring of last year an agent called on them to sell a fertilizer, showing them samples "in little bottles, which upon opening had a strong smell of ammonia." He called it the "*American Bone Fertilizer*," and said that he had sold a good deal about Hartford at $60 per ton, but as he wanted to introduce it here he would let us have it for $55. He represented it to be a "first-class superphosphate." Both this man who was "Sub-agent," and the "General Agent," said that it was "better than Peruvian Guano." One of the farmers "tried a few bags, thinking that it would neither make nor break him," another took a ton and a half, and so on. But they all had the same experience. One "could not see that it was any better than the dust from the road;" another "saw no effect from it," and they "will give their affidavits that they got no benefit from it at all."

The best superphosphates contain from 12 to over 20 per cent of phosphoric acid, of which from 6 to 12 per cent or more is *soluble*. This contained a trifle over 2½ per cent of which no appreciable quantity was soluble. A good quality of Peruvian guano will contain 8 per cent or more of nitrogen. This article contained 1 per cent. The best guanos and superphosphates contain from none to 8 per cent of sand, etc. This contained 47.2 per cent, or 947 lbs. to the ton. It has the appearance of salt-marsh muck mixed with sugar-house scum, the latter a material of little agricultural value, which is sold in New York, as I am informed, at $5 or thereabouts per ton. The estimated value was $8.23 per ton. That is to say, the valuable ingredients furnished by one ton of this fertilizer could have been bought for $8.23, or less, in any of the best phosphates, or bone manures, or guanos sold in the State.

These facts are shown clearly in the table below. For explanations see April No. The Guano and Superphosphate are very good articles of their kind.

Table 32.

VALUABLE FERTILIZING INGREDIENTS IN 100 LBS. OF FERTILIZER.

	Names of Fertilizers. Guanape Guano.	Ammoniated Superphosphate.	Am. Super phosphate of bone.
	Lbs.	Lbs.	Lbs.
Nitrogen	9.37	1.62	1.03
Phosphoric Acid, Soluble	5.8	9.9	none.
Phosphoric Acid, Insoluble	11.7	4.1	2.6
Phosphoric Acid, Total	17.5	14.0	2.6
Sand, etc	none.	3.6	47.2
Estimated Commercial Value per Ton	$78.12	$42.87	$ 8 23
Retail Price per Ton	60.00	42.50	55.00
Cost of Phos. Acid, soluble per lb. in cts.	13	14¾	
Cost of Phos. Acid, insoluble per lb. in cts	5 1-5	6	40
Cost of Nitrogen per lb. in cts	21¾	23½	167

I am informed that upon learning the results of the analysis of the American Bone Fertilizer, the purchasers, who had not paid for the article, very justly refused to do so, one person saving eighty dollars thereby. As the sellers are liable to prosecution and fine for violation of the State law, in offering a fertilizer for sale without a "true statement of the analysis," any suits for recovery of payment are hardly to be feared.

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Large White Pigs.

The distribution of the different classes of pigs, both as regards color and size, would be a curious and interesting study. When the main object is pork, bacon, or hams, and their most economical production, it would seem that there must of necessity be one class of pigs that would meet these wants most completely, and which would oust all others from the competition. But instead of this being the case, we have, on the contrary, a seemingly most varied opinion as to which is the most profitable size of pig, and a most inconstant fashion as to color. It has long been considered that the black pigs were the best for the Southern States, as they most easily resisted the ill effects of the hot sun, and if it is true, as has been authoritatively stated, that they can forage with impunity upon some of the common wild plants, which are fatal to the white pigs, we have a still more satisfactory reason for this popular preference. But in the north the taste has very largely run to the white breeds, and we have many excellent varieties so nearly related in character, that it would be entirely safe to abandon all distinctions between them, excepting as to size, and to class them, as is now done in England, as the large and small white breeds. It would puzzle the most acute judge of swine to distinguish some small Yorkshires from some Suffolks, or to state so clearly that the wayfaring man could not be misled, wherein they differ; or to distinguish in the same way between the large Yorkshire, the improved Cheshire, the Jefferson County, or some of the Chester White swine. At the fairs, one has to hunt up the show-cards or the catalogue to discover the name given to the different animals, and it is not always certain to be one that meets the approbation of an expert in swine. The snub, *retroussé* nose of the Yorkshire is at home in the pen of the well fattened Cheshire, and the Chester White has the drooping ears as frequently as otherwise. Whether or not it would not both simply expedite and justify matters for the committees at the fairs to abolish all other distinctions than that here suggested, is a question we think worth attention.

"Large white breed" is significant enough, and if the good points of each of the different varieties were summed up, it would be hard to find one that was not claimed by all of them, nor one fault that was not repudiated. Our illustration represents model large white pigs, and we would be content to leave those of our readers who are prejudiced in favor of any one special variety of this class of pigs, to say if this is not a good representation of what they claim their favorite breed to be. Without doubt, the large white breeds are profitable pigs. They are prolific and good nurses, good feeders, hardy, and if they do not arrive at profitable maturity as soon as the small breeds, yet they will make an amazing quantity of pork from a bountiful supply of corn. As a manufacturer of bulky corn into readily movable and merchantable product, there is nothing better, and perhaps nothing equal to them, unless it be the deservedly popular Poland-China of the Western States. What was the origin of the larger white breeds, is lost in obscurity. Probably the "old English hog," which, being found most numerously in the two larger counties of England, Yorkshire and Lancashire, became more especially identified with these names, and were in later years known as either or both the Yorkshire and Lancashire hogs, was the original progenitor of all our large white breeds. At any rate, what is known as the large Yorkshire, is so much like the pigs here illustrated, that if they be not in fact the same, they may well be accepted as very near relatives. They are, in fact, portraits of a pair of "large white pigs," only so designated, bred by the Earl of Ellsmere, Worsley, England. And in this age of improvement, when a "dash of new blood" is considered useful or necessary to make certain desired points to perfect a hog, and breeds become rather mixed, this designation would seem to be sufficient for all purposes.

Fig. 1.—LARGE WHITE PIGS.

The Berkshire Swine.

Decidedly the most popular breed of swine of the present day, is the Berkshire. That it is black in color, is only an objection to those who form their opinions from prejudice rather than from knowledge, as the color is not even "skin deep," and a Berkshire ham, or side of bacon, when freed from hair, is not to be distinguished from the same parts of a white pig. The Berkshire is not classed amongst the large breeds, nor can it be placed amongst the small breeds. In this respect it holds an intermediate place, though specimens occasionally reach a very respectable size, and compete favorably with the heaviest swine. No breed has undergone a more elaborate process of improvement than the Berkshire. Originally of a tawny or reddish sandy color, spotted with black, with large lop ears, hanging down over the eyes, and coarse in form and feature, the breed has been brought to a nearly entirely black color, the face, tail, and feet only, being in small part spotted with white. The form has been refined and filled out, the bone also refined, the shoulders and hams rounded and broadened, and the sides deepened, until no more handsome bacon swine now exist than these. The ears are pricked and much lessened in size, as may be seen by our illustration (fig. 2), which is from the London Field, and represents a choice specimen of the modern highly improved Berkshire pig. This animal leaves nothing to be desired in the way of a profitable pig, either for a farmer, or a feeder who keeps but one or two animals for his home supply of hams and bacon. The most conspicuous remnant of the old fashioned Berkshire, left in its modern relative, is the pinkish hue of the skin, which distinguishes it readily from the other black breeds, such as the Essex or the black Suffolk. Originally there were two distinct varieties of this breed, that which was wholly white, and that which was principally black. The white Berkshires we have not seen of late, nor at all in the United States, having seen but a few of them some years ago in the yards of a Canadian breeder, who imported them. These were known as the Windsor breed, and, with the Coleshill, another white variety, still exist in England. It is, as a black breed only, that we know the Berkshire. The chief points of the breed are as follows: a moderately short head, dished face, nose straight and not turned up, as in some small breeds, ears generally pricked, although drooping ears, while not desirable, are not incompatible with purity of blood; color black, with purplish tinge, and not a dead black like that of the Essex, sometimes the color shows a slaty-bluish tinge, doubtless derived from crossing with the Neapolitan. The eyes

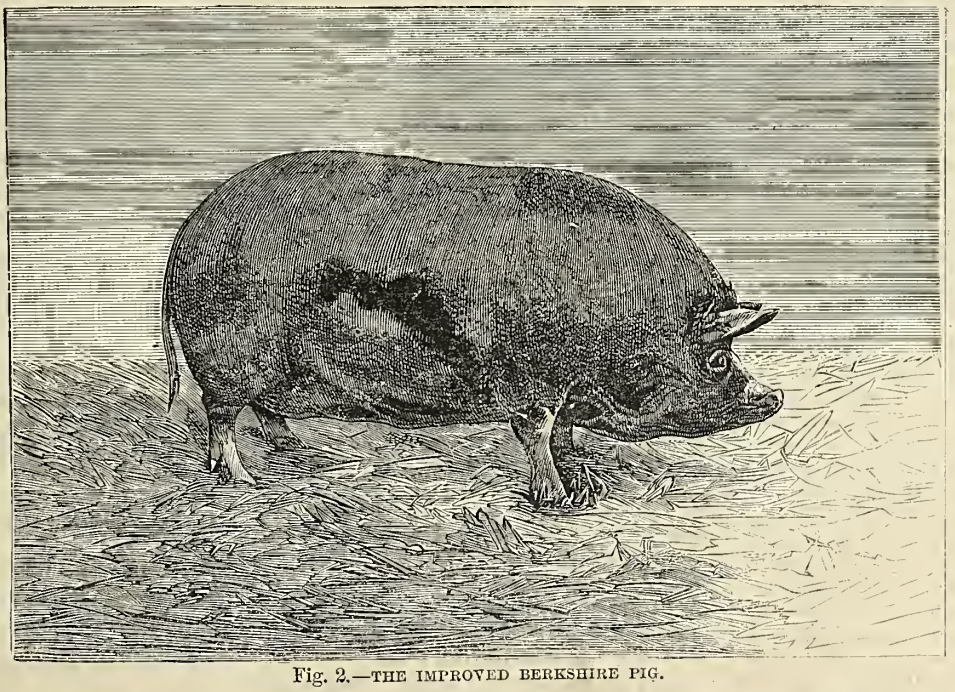


Fig. 2.—THE IMPROVED BERKSHIRE PIG.

are not sunken and small, but large, bright, and intelligent; the back is broad and level, but the barrel is not so round; as in the Essex or the Suffolk the sides are deep, and the rump drooping, with the tail often set lower down than the line of the hips; the legs are short and strong, and the feet white; the hair varies, according to the kind of management, from a thick coat, soft, silky, and free from harshness and bristles with those that have plenty of out-door exercise, to a thinner, finer, but not weak coat in those that are closely penned; the flesh has a good mixture of fat and lean. When properly fed, the pigs reach a weight of from 300 to 500 pounds, at a year old, if the animal is well kept from birth. The history of the Berkshire as a favorite with feeders and breeders, dates back only for 15 years, and it can justly be said that it is only now that it is finding its proper position amongst farmers, in spite of the prejudice against its color and wholly through its undeniable merits.

Among the Farmers.—No. 5.

BY ONE OF THEM.

Home again! As I hoped and expressed in my last letter, my "back-furrow" has been turned, and for a while at least I shall be content to remain on this side of the Atlantic, and enjoy the Centennial Year under the folds of the Star-Spangled Banner, even if not among the crowds in Fairmount Park. How many good people are making plans for spending a week in Philadelphia this summer! From present appearances, it would seem that the Philadelphians had determined that we people of moderate means should not be deterred from visiting the great exhibition by the extravagant charges of hotel-keepers, for multitudes of private families stand ready to open their houses to respectable people, at a very moderate rate for transient lodging and board. So with moderate railroad fares, it seems to be really possible for almost all thrifty citizens to go and take their wives. There is nothing that farmer folks can do that is in every way more beneficial, than

Traveling,

while there is nothing which they do less. Their habits are, I believe, the same all over the world, but it is nevertheless true, that those who journey most, and see most of the farming, of the crops, of the live stock, and of the implements of different sections are, as a rule, the most successful farmers.

What a difference there is in the way different men look at the same things! Some are always ready to condemn unsparingly every thing to which they are not accustomed, like the stranger at Boston, who, after breaking and smelling of a nice, brown codfish-ball, sent it away, remarking to the waiter, "there is something dead in this biscuit." Others are quite as ready to wonder and admire, even though the way they have been brought up to do the same work may be decidedly better. I remember well the feeling with which I read or heard about European peasants plowing, with a woman and a cow drawing the plow; but when I actually saw it done, it seemed very different. The cow was usually doing the work, but, not being so well broken perhaps as an ox would have been, it was necessary that she should be led; so the wife, as a true help-mate, took hold to lead the cow, and at the same time passing a strap around her own shoulders, lent her weight to relieve the animal.

One can not study agriculture with advantage from the railway-car windows, yet one sees a great deal—and it is very easy to stop for half a day almost anywhere. We are too apt to go from one end of the land to the other with a grand rush—by express trains and Pullman cars—straining our eyes, and seeing little, and tiring ourselves out to very little purpose. "Stop-over" tickets are now furnished by the conductors of almost all trains, and half a day spent among the farmers of such regions as Herkimer Co., N. Y., Monmouth Co., N. J., or Chester Co., Pa., will be well rewarded.—Thinking over my letter on

Shallow Soil Farming,

I find the story is not half told—and why should it be? We find plenty of hard work from April to November, inclusive, and upon hardly two consecutive days do we find the same work to do. Almost all of the work is peculiar to shallow soils, and yet not so peculiar that it seems worth while to describe it in detail.

Hay-Making

is June work, and I suppose this will be read in that month. Where you can cut two, and two and a half, tons to the acre, as every farmer ought to do, who has a well-tilled, clayey or loamy soil, your system is very different from ours, where a ton and a half, to a ton and three-quarters is a good yield. Still our hay-making involves but little labor. If we can, we mow with a machine in the afternoon and evening, and the next day never touch it until say eleven o'clock, then, if the sun has been or is hot, rake it up into wide, loose windrows, which it may be well to shake up, or at least to turn over, and look for wet locks and green bunches, before three or half past three o'clock. Then, either get it in, or cock it up, while still hot, to have a good time to cure evenly, before it is placed in the mow or the stack, as it should be before noon the next day. I would not have believed it possible to cure hay well with so little labor, had not a hired man persisted in doing so whenever he could, until he proved to my satisfaction that hay cured in this way was just as green, sweet, and evenly cured, as that with which I took the most pains. He had learned the practice on the light lands of central New Jersey, but I find that my neighbors follow quite a similar plan, except that they do not often mow the evening before. This is a great advantage, because the dew all lies upon the surface of the mown grass, fully exposed to the sun; and it is almost always dried off by nine o'clock. The only precaution to be observed, is to cut after the dew begins to fall—or at least after the sun ceases to exert any drying influence. It is better if the grass does not even wilt before morning, for then it dries much brighter and evener.

In dull weather, or what is worse, alternate sunshine and showers, my neighbors let the hay lie just as it was cut. The top bleaches, but the great bulk of it remains of a fair color, and cures very fast afterwards. If the hay is any way fit to rake up, I prefer to get it into windrows, or even into cocks, to stand out the rain. There is danger of heating during long storms, but it must be watched.

English Hay.

We cannot too highly prize our usual hay-making weather in this sunshiny country. A few weeks ago I had occasion to buy a quantity of hay in England, for feed for cattle on shipboard, and was surprised to find how little of it was of really first quality. Almost all showed evidence of having been repeatedly rained upon, and of not having been thoroughly cured. Some was green and sweet, and this was remarkably good. Stack after stack upon some farms which I visited, (not to purchase hay), were of a dark brown color, yet not of the so-called "brown hay," for this is intentionally subjected to high and hot fermentation.

Hay Barracks.

A very convenient stack-roof, resting upon four 20-foot posts, and movable upon them up and down, is designated by this name over a considerable extent of the country. I like them very much. Hay is safer in them and keeps better than in the barn. It keeps better than in stacks, unless these are exceedingly well made and thatched. The posts are usually set 12 or 13 feet apart, and the roof, which is of light boards, or of thatch, projects a foot, to a foot-and-a-half on all sides. Hay may be put in "barracks" greener than it would do to put it in the mows, especially if

A Ventilating Flue

is made up through the center. This is most conveniently made in hay mows, or in stacks, or barracks, and for either hay or grain, by filling a large long sack with hay, setting it upright where the flue is wanted, and as the mow or stack rises around it, keep continually pulling up the sack, and treading the hay well around it. The value of these flues to farmers who, from preference or necessity, get in their hay rather green, can hardly be estimated except by trial. The excess of moisture, which would otherwise settle in the mow, and cause the hay to become mouldy and dusty throughout, is all drawn off for fully six feet on all sides. Hay will almost always heat more or less, and it is a great advantage to it to do so, if the fermentation does not go too far, and especially if the moisture, which is always thrown off abundantly, does not remain in the cooler and looser parts. Here, as the heat subsides, it is apt to settle like a heavy dew, and very often without having caused any harm, these moist spots present favorable circumstances for mould to grow, which more or less pervades a great portion of the mass.

Hay for New York Market.

As a rule it is no doubt a poor plan to sell the hay and straw off the farm, but where farmers are so situated that they can sell hay and buy city manure, or any other equally good, at a reasonable price—and it is a hard thing to say what is reasonable—it is very profitable to sell timothy hay. Timothy, with a slight admixture of red top, is the best hay for New York—either baled or loose. When hay is cut for consumption upon the farm, it should, of course, be cut before the seed is ripe—even before it is more than barely formed—for the stems are then full of flavor and nutriment; there is little woody fiber in them, and the hay is relished by horses and cattle without any addition. When, however, the thrifty farmers who are in the habit of sending hay to New York, cut their timothy and red top meadows for sale hay, they wait until the red top is nearly ripe—just as long as they dare to, until the timothy, if left longer, would loose its heads by the seed shelling off. In this condition it is very stiff and strawy; nevertheless horses will eat it well, and it seems to be regarded by city buyers and consumers, as the most economical and best hay they can buy. It is nearly always cut fine, and fed as "cut-feed," with corn and oats ground together upon it. No doubt it furnishes a bulky article of diet, more nutritious and better than straw, and better to be fed with ground fodder than what we regard as much better hay, cut greener.

There is a great saving of labor in making such hay as I describe. It lies up very loose and light, cures easily, is not likely to be over-dried, and may be housed much less dry than younger hay, without danger of heating; besides, a considerably greater weight of hay is obtained. There is, to be sure, a greater tax laid upon the land, or rather upon the manure it contains, but that is of no moment upon our light soils, while the advantages are important in many ways....The allusion to the manner of feeding horses on "soft" feed or "cut feed," reminds me of the

Crushed Oats of England,

which is certainly the most admirable feed for horses that can be. With us this article is practically unknown. They use, in New York and vicinity, what purports to be one-third sound corn and two-thirds sound oats ground together. Were it truly this, it would be excellent feed, but it is notorious that, not only is second quality of corn used, but the siftings of corn-meal, consisting of the bran, and often of bits of cob with some good meal, coarsely ground, are used instead of mixing the grain and grinding it, as should be done. Then, too, the oats are the lightest and poorest that come to market, and often full of dirt and grit from having been lodged while growing, or from lying too long in the swath before binding up. From whatever cause oats become unmarketable, it does not prevent their being used for "ground feed."

In England oats are crushed by hand in machines, not larger than a root-slicer. One large, smooth-faced wheel, with a face about 3 inches wide, revolves in close proximity to a smaller one, 6 inches in diameter, and about the same face as the larger one. A hopper permits the discharge of the oats between these two wheels, which, rolling together, crush each grain as flat as a wafer. As they drop from the crusher, the plump oats are nearly circular; those less plump elliptical, and the few false kernels in the samples I examined, were flattened and broken, but showed no white flour, and no de-

finite form. In one ordinary sample, which weighed 44 pounds to the bushel, almost every oat was flattened into a white, floury disk, nearly or quite as large as an old-fashioned silver 3-cent piece. Oats thus crushed may be fed as they are, and not one will pass the digestive organs unacted upon, as so often happens with whole oats; they may be mixed with cut or chaffed hay, wet, or with steamed fodder of any kind. They go decidedly further. Those who figure most closely, are the most positive in their approval of them from motives of economy solely, and uniformly assert their superiority to ground oats, even though they were to grind them themselves.

Oat-crushers will certainly find their way to popularity among us, for with our light-weight oats they are more important than where the heavy oats of Europe can be obtained—oats weighing 40 to 47 pounds to the bushel are not uncommon there, while here 32 pounds is a legal bushel by weight, and the measured bushel oftener falls below than it goes above that weight. Many city dealers sell 90 lb. bags for 3 bushels.

What to do with Non-heading Cabbages.

Last autumn I was mourning over an unusual number of half developed cabbages, which were only fit to be fed to the cows, and mentioned the fact to a Dutchess Co. farmer, who is in business in New York, and has lately bought a farm near us, asking if his crop had turned out badly. His answer was, that he had no more soft heads than he wanted, or to the effect that he would feel disappointed if he had not a considerable number. Now we, neither of us, raise cabbages for market, but for our own consumption mainly, and I was utterly at a loss to know what he could do with a quarter of his crop that failed to make heads.

He told me that he dug a wide trench, so deep that after some top soil was thrown in he could set the cabbages out in the trench as close as they could stand, and their heads would not come up level with the top of the ground. When planted, he covers the trench with boards and some brush, corn-stalks, salt-hay, and earth on the top, keeping it open at the ends or elsewhere until cold weather, and then covering it in close. He said they would all have firm, solid heads in the spring.

I tried it, and at the time I write (April) we are enjoying the best cabbages we ever ate. They are rather small to be marketable, say 4½ to 6 inches in diameter, solid and sound, crisp and tender, as delicate as cauliflowers, and what is most remarkable, I never know when we are going to have cabbage for dinner until I see it upon the table. The great objection I have to this most wholesome and delicious vegetable is, that it usually fills the house with its perfectly detestable odor, so to have cabbage without this drawback is worth all the trouble it costs. If these

Winter-headed Cabbages

could once become known in the market, I am confident their merits would command for them a ready sale all through the spring. The cabbages in market at this season are pretty poor. They are very apt to be slightly decayed, will keep but a little while, as they wilt at once, and soon after rot. I wish now that I had enough to test the market with, but I have not, and write this partly in the hope that somebody else will do it next year. While on this subject, I would like to mention a delicious kind of cabbage, which I saw for the first time in the Island of Jersey this winter. It is a non-heading variety, growing like a kale, but with perfectly smooth leaves, and is known as

Couve Trouchouda, or Portugal Cabbage.

It may be known in this country, but it is comparatively new among English seedsmen, and is in none of our American catalogues. The large leaves are broken off from the stalks, and boiled, stems and all, and are almost as tender and delicate as asparagus. Very little odor comes from it, and a change of water almost entirely prevents that being observed. I was delighted with it, and shall distribute the little seed which I brought, so that it shall be well tested this season.—[This has been known in this country for many years, but appears to be dropped from the catalogues.—Ed.]

Southern Cow Peas—Cultivation.

BY P. J. BERCKMANS, AUGUSTA, GA.

[Last month we were unable to make room for Mr. Berckman's article, and merely gave such points in relation to the preparation of the soil and planting, as were necessary for those who wished to try the crop. We now give the article entire. Ed.].

Any land susceptible of being plowed will, as a general thing, grow the cow pea, though some varieties, especially the "Clay," "Red," and "Black," succeed better on poor land, than the "Lady" or "Crowder" varieties. We often hear it said in referring to "dead poor" land, that "it will not sprout a cow pea."

Land is plowed in February or March, if an early crop is desired, but for fall crops, wheat or oat stubble is plowed as soon as these crops are harvested. It is useless to sow before middle to end of April, as the seed will not germinate until the ground becomes well warmed. For an early crop, sow broadcast at the rate of one bushel to the acre, on ordinarily fertile lands, increasing the quantity to 5 pecks, or even 6 pecks, for poor lands. Plow the seed under with a light turning plow, and harrow the surface; or the peas may be sown after the land is plowed, and harrowed in. If sown in July and August, it is preferable to plow in the seed, as deep covering will hasten their germination.

On good soils two crops of forage are often cut from one sowing, providing the mid-summer season is the least favorable. As a renovator of lands, it is best to sow the end of April; let the crop grow until end of June, when the whole should be turned under, first sowing a couple (or more) bushels of land plaster over the vines; then sow immediately again. This second sowing having a good supply of food, amply repays the loss of the first crop.

Sometimes peas are planted in drills, but this is advisable only, if grown for forage, when other crops occupy the ground in part, such as melons, early corn, etc.

Varieties Preferred for Forage.—All the plain or semi-colored varieties are of a spreading habit, and are best for this purpose. The "Red," "Clay," and "Black," of the plain colored kinds, and the "Whippoorwill," of the semi-colored, are most esteemed; they spread over much surface, and are more prolific on ordinary soils, than the "White Field," "Lady Pea," etc., which need better soil. The "Red Ripper," or "Tory," may be sown in fall if preferred, as it remains sound in the ground during winter. This variety is less in demand than the above named.

Varieties for Market and Table. — The speckled varieties are usually bushy in growth, and unfit for forage. There are, however, some speckled varieties which are of spreading growth, but it is difficult, if not impossible, to know whether they will be bushy or not, by the seed, and their peculiarities can only be discovered when growing; hence it is safer when purchasing peas for forage, to procure the plain and semi-colored kinds.

Bush Peas, (sometimes called China), are sown in rows, either in the open field, or between the rows of corn, when that receives its last working. They are harvested in the fall by being pulled up and thrashed. The "Lady Pea," and "White Table," are used for culinary purposes, sometimes as snaps, or shelled in the green state; when dry they are very desirable for soup, or they may be baked the same as the white bean, so widely known as one of the institutions of New England.

Cutting and Curing Fodder.—The vines are fit to be cut "when the pods are on the turning point," that is, when here and there one is turning yellow. Usually the crop is cut by scythes, the objection to mowing machines is, that the vines, when thrifty, are often badly lodged; this objection may be overcome in a great measure by mixing some grains of corn among the peas when sown. The corn-stalks helping to uphold the pea vines.

The main difficulty in curing pea hay is, to retain the leaves on the stalks, and the vines must be handled as little after being cut as possible. Our plan for the past 20 years has been, to leave the vines, as cut, for one day; then take three short rails, place them on end so as to form a sharp cone; on the ground and in center of this cone lay a longer rail, and after piling the vines around the erect rails as high as one can reach with a pitch-fork, lift up the end of the rail laying flat on the ground, and prop it up with a short stick. This will give ample ventilation to the middle of the stack. Leave the vines undisturbed for two to three weeks, when they will be found well cured and ready for storing in the barn or elsewhere. When storing away the fodder, use a liberal supply of salt sprinkled over every layer. This will help it to keep its bright color, and be an advantage when feeding.

Yield of Fodder and Seed, and Value.—It is difficult to state the average yield of both forage and seed, so much depends on quality of soil, manure, cultivation, and seasons. On good land, and under good culture, two tons of forage per acre may be expected. In very favorable years, when peas are sown at the end of April, we have frequently harvested two crops of forage from one sowing, and averaged fully two tons from each cutting. This, however, is unusual, and it is safe to say that one ton per acre, is a probable average under ordinary culture and seasons. The market value of pea hay ranges here from 75 cents per 100 lbs. in the fall, to $1.50 per 100 lbs. in spring, and $20 per ton is about the average price. The yield of seed is very variable. Some farmers have harvested 30, and even as high as 40, bushels per acre, but under the ordinary system of cultivation 10 bushels per acre is an average. This, however, as stated above, is produced when peas are sown in rows in corn fields, as one seldom sees a whole field devoted exclusively to growing peas for seed. Cow peas are always worth $1 per bushel. Sometimes they are quoted in the fall at 75 cts. to 80 cts., while in April and May they are often held at $2.50 per bushel. The table varieties, being smaller in size, and not cultivated in extensive field crops, command higher prices than the field varieties.

Value as Forage for Stock.—Well cured cow pea hay is more nutritious than any hay produced from grasses, millet, or other plants, used for the purpose. When the pods are left until they are filled, the value of the food is much increased. Horses and mules relish this forage wonderfully, and when fed upon it, should receive less corn or oats than when fed upon other provender. We find that one ton of good pea hay will last as long as a ton and a half of northern baled hay of good quality. The only care needed in feeding horses and mules on pea hay is, not to give them an overfeed of it, especially if the forage contains a large proportion of peas; these are apt to create flatulence and colics. The forage may be given whole, or cut up wetted and sprinkled with some ground feed; then neither corn or oats should be given. We find it best to give two rations of whole pea hay per day, and one of corn or millet provender.

Hay Caps.

We have of late had many enquiries about hay-caps, and in reply have prepared the following illustrations, which show the manner in which they are made and used. These caps are of great value, as by their use a large quantity of hay may be secured in the field against a sudden storm, and the hauling of the hay may be left until the whole crop from one field has been cut and cured. They may also be used to cover shocks of grain, and prevent damage from rain while they are standing in the field. As the top, only, of the hay cock or grain shock needs to be protected, it is not necessary to have the caps larger than a yard or a yard-and-a-half square. The material is common brown cotton, and the kinds we have found preferable in

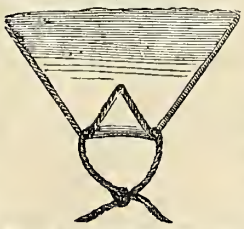


Fig. 1.—CORNER OF CAP.

quality and size, are either the Wachusett 48-inch sheeting, now worth 14 cents a yard by the piece; the Waltham sheetings of different widths, as fol-

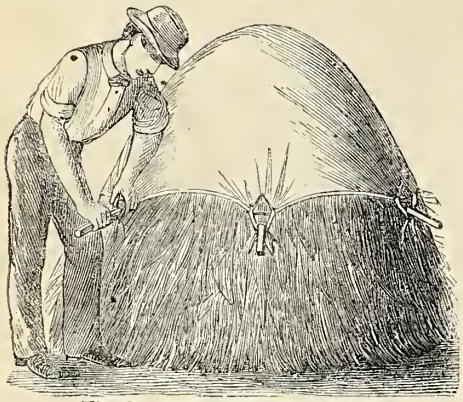


Fig. 2.—PUTTING ON HAY CAPS.

lows, F, one yard wide, P, 1¼ yard wide, and A, 1¾ yard wide, worth respectively 7½c., 11½c., and 17½c. per yard. The prices here given are those current in New York at the end of April. Almost any brown cotton, that is of the proper width, will answer the purpose; light cloth will turn the water sufficiently, although not so effectively during continued rains, as the heavier goods. When the cloth has been cut into squares, the torn edges should be hemmed, and the corners turned over a loop of cord, and stitched down, as shown in figure 1. The hay should be gathered into large cocks, narrowed at the top, and well raked at the sides. These may be made to hold 300 pounds or more, if carefully built; we have made them of such a size that five would make a wagon load of nearly a ton of hay. When of this size, 100 caps would be sufficient for the ordinary crop of a ten acre field, or to cover about 20 tons of hay. The method of using them is shown in figure 2. A supply of wooden pegs is provided, and one of these is thrust into the hay, as shown, passing through each loop. The cap should be stretched tightly before it is pegged down, otherwise the wind may get underneath it and blow both it and the top of the hay cock off.

Scare Crows.

No doubt some damage is done to the newly planted corn by crows and crow-blackbirds, yet we have never interfered with them, believing that the mischief done by them is less than the good they do by destroying cut-worms, grubs, and other insects. There is a certain balance in nature, maintained through the constant strife between living creatures, which seem to exist only to destroy one another, and as we can scarcely determine which are really useful or otherwise, we may possibly disturb this balance by interfering and destroying any of those which we suppose to be injurious to us. Thus, by our constant warfare

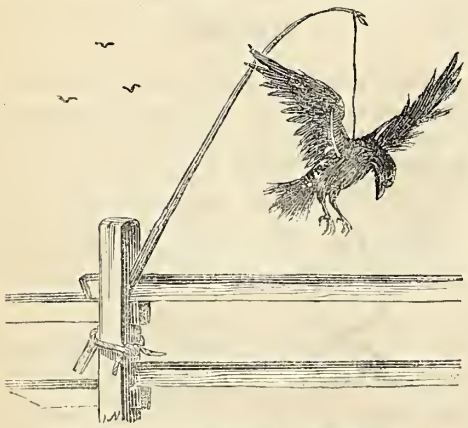


Fig. 1.—OLD STYLE OF SCARE CROW.

against crows, owls, skunks, and other animals which we, perhaps wrongfully, assume to be noxious, we may have encouraged the increase of really injurious animals and insects which do us serious damage. Crows especially, merit our constant regard for their continued destruction of beetles and other insect vermin, and during the portion of the year, when our fields are bare of crops, they forage perseveringly over them in pursuit of their food. In the spring only, are they considered as enemies, and then, the good they have done for eleven months of the year, is forgotten in the comparatively small amount of mischief they commit for a month in the corn-field. To poison them with baited corn, or to shoot them while engaged in their efforts to free our fields from cut-worms, is no doubt a great mistake. To *scare* them from the fields, by any method, is permissible, although that too may be a mistake. Nevertheless it will be done, and we therefore here describe some effective "scare-crows" for those who wish to use them. Crows are remarkably sagacious birds, and soon learn to understand anything which they have time to study. A dead crow, hung by a swinging cord to an elastic pole, appeals directly and forcibly to their sense of caution, and if it is arranged with outspread wings held by wires so as to catch the wind (fig. 1), its motions are very similar to those of a live crow struggling to get free. But the best scare is one in which there is a constant change of motion, which confuses the memory, and bewilders the intelligence of the crow.

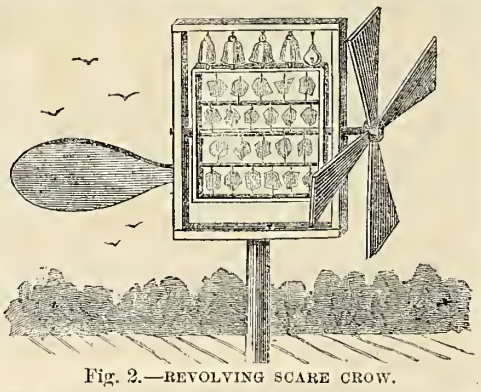


Fig. 2.—REVOLVING SCARE CROW.

In figure 2 is shown such a scare, which consists of a frame mounted upon a post and attached to a small wind-mill, by which it is kept rotating. The frame has four bars, from one to another of which wires are strung, and to the wires are fastened many pieces of bright tin, glass, both plain and colored, broken crockery, and colored feathers or rags. The rotating frame is mounted in a stationary one, and as it revolves, the bright pieces flutter and change positions at every moment, reflecting flashes of light when the sun shines, and jangling continually when the wind blows. The effectiveness of this scare-crow may be increased by hanging a few small bells upon the top bar of the outer frame, so that the clappers may be moved by the edges of the inner rotating frame as they revolve. One such scare-crow in a ten-acre field, will keep the crows at a respectful distance for the whole season, and the ingenious builder will never be humiliated by finding a sentinel crow, perching contemptuously upon the top of it, as is sometimes seen upon the outstretched arm, or the simulated gun, of the usual dummy in the corn-field, while the rest of the flock are busily engaged at their mischief in its vicinity.

Ringing and Handling Bulls.

Now that more attention is given to improving farm stock, a bull is kept upon nearly every large farm. The high-bred bulls are spirited animals, and are exceedingly dangerous if the utmost caution is not exercised in managing them. Experienced breeders are not unfrequently caught unawares, and unceremoniously lifted over the fence, or forced to escape ingloriously from one of their playful animals, or even seriously injured by the vicious ones. It should be made a rule, wherever a bull is kept, to have him ringed before he is a year old, and brought under subjection and discipline at an early age, while he can be safely and easily handled. Some time ago we assisted at the ringing of a yearling bull, which severely taxed the utmost exertions of six persons with ropes and stanchions to hold him. A slip of the foot might have caused the loss of a life, or some serious injuries. To avoid such dangerous struggles, a strong frame, similar to that in figure 1, in which to confine the

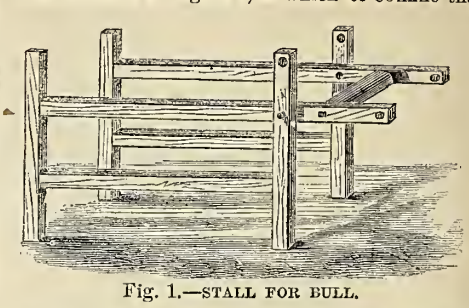


Fig. 1.—STALL FOR BULL.

bull, may be used. The frame consists of four or six stout posts set deeply in the ground, with side bars bolted to it, forming a stall in which the bull can be confined so that he cannot turn round. The frame may be placed in the barn-yard or a stable, and may be made to serve as a stall. At the front, a breast bar should be bolted, and the upper side bars should project beyond this for 18 or 20 inches. The forward posts project above the side bars some inches. The ends of these posts, and the side bars, are bored with one-inch holes, and at the rear of the frame there should be tenons or iron straps to receive a strong cross bar, to prevent the animal from escaping should the fastenings become broken or loosened. The bull, led into the frame, is placed with his head over the breast bar, and the horns are tied with ropes, an inch in diameter, to the holes in the bars and posts. He is then secured, and his head is elevated so that the trochar and cannula can be readily used to pierce the cartilage of the nose, and the ring inserted and screwed together. Before the ring is used, it should be tested to ascertain that it is sound and safe.

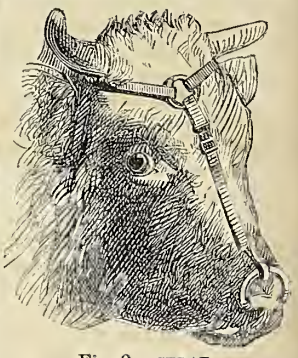


Fig. 2.—STRAP.

When the ring is inserted, the straps shown at figure 2 should be used, for the purpose of holding it up and out of the way, so as not to interfere with the feeding of the animal until the nose has healed and become calloused. The straps may be left upon the head permanently, if desired, when the front strap will offer a convenient means of catching him by the staff, when necessary to do so in the field. The staff is a matter of the greatest importance. This should be made of the toughest ash or hickory, and not less than five feet long. With a staff of this length, the herdsman can check the wildest bull, and by resting the butt-end of it upon the ground, can throw the animal's head up, and prevent him from approaching too near. The hook of the staff is shown of two kinds at figures 3 and 4. One is furnished with a spring by which it is closed. A metal bar attached to the spring and passing through a hole in the staff, prevents the ring from slipping along the spring. The other is provided with a screw by which it is closed.

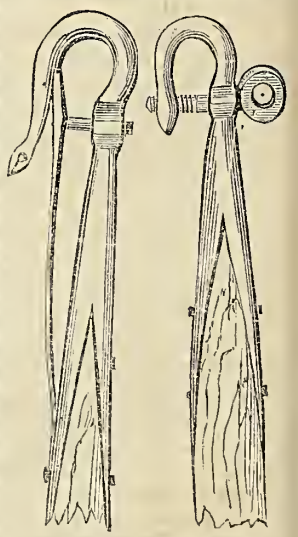
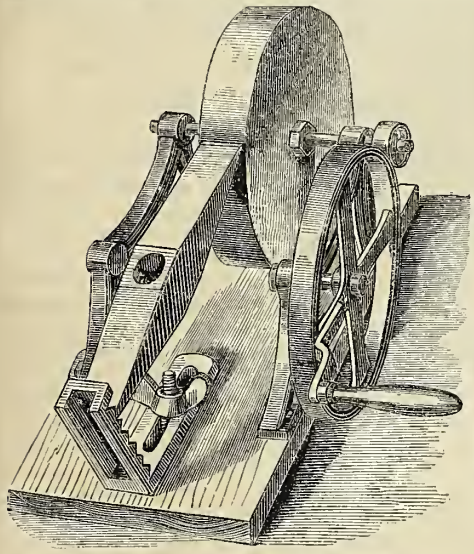


Fig. 3. STAVES. Fig. 4.

The former is preferable, as one is not obliged to approach very near to the bull to secure the hook. The forms of staff and the head straps here illustrated are used by Mr. Woodward, of Tewkesbury, England, and are well worth adopting here by those farmers and breeders who do not already use either these or equally good substitutes. The illustrations of the head straps and staves are reproduced from the London Agricultural Gazette.

Grinding Tools.

The useful effect of many tools depends greatly upon the exact grinding of their edges to a proper

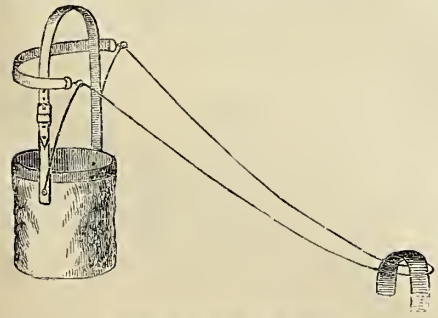


DEVICE FOR GRINDING MILL-PICKS.

bevel. A cold chisel, for instance, requires an edge of a certain bevel to cut hard metal, and one of a different angle for softer metal; the harder the work to be cut, the greater should be the angle formed by the edge, and the softer the material, the more acute the edge. The same rule is to be observed in wood-cutting tools. But there are no tools which require more exact and careful grinding than mill-picks, and the first business of a miller is to know how to grind his picks. Upon this depends the dress of the stones, and the quality of work turned out by them. The illustration represents a small grindstone for sharpening picks, which is run by means of friction wheels covered with leather, and provided with a gauge for setting the pick at a variable angle to the stone. This gauge has been recently patented, but is so serviceable as to be worth a moderate fee for its use. It consists of a series of steps raised upon a slotted plank, which is screwed upon the frame of the grindstone. By means of the slot and a set screw, seen below the pick, the gauge can be set for tools of different lengths, and each step causes the tool set in it to be ground at a different angle.

A Nose-Bag for Horses.

When field work commences, it will be found very convenient and economical, to have a pair of



NOSE-BAG FOR A HORSE.

nose-bags for each team, in which a light feed may be taken to the field, to be eaten during a few minutes' rest in the forenoon. When doing hard work, frequent light feeds are much better for the team, than a few heavy ones. A horse has rarely sufficient opportunity in a hasty dinner-time, to eat enough food, and a full meal will interfere with his work, or his work will interfere with the proper digestion of a full meal, and either is injurious to the animal. A nose-bag for field use is shown in the accompanying engraving. It is made of canvas, with straps of leather; the straps being made in the shape of a head-stall. To enable the horse to reach his food, without resting the bag on the ground, a cord is passed through rings in the front band, and attached to the saddle. When the horse reaches out his head, to procure the food, the bag will be drawn up by the action.

Open Links.

R. C. Davis, of Philadelphia, sends two samples of open links, which he thinks superior to that illustrated in the *American Agriculturist* of December last. One of these (fig. 1) is made of ⅝-inch iron rod, and when used to connect a broken chain, is simply closed by a blow from a hammer or a stone. There being no rivet, the link is not weakened in any way. Figures 2 and 3 show another link, made of malleable cast iron, in two parts, which are fastened together by a rivet in the center. The link is seen open at figure 2, and closed at figure 3. A few of these links may be carried in the pocket, and are ready for instant use in case of an emergency. The last mentioned links are kept for sale at the hardware stores, and are known in the trade as Kirk's links; the first named may be

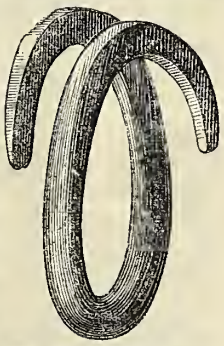


Fig. 1.—COMMON LINK.

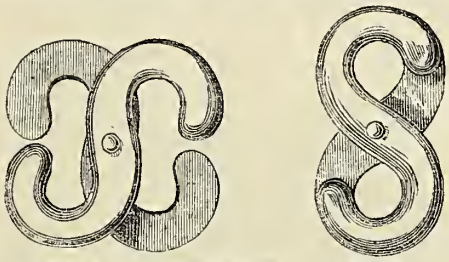
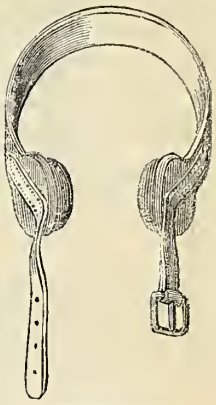


Fig. 2. KIRK'S LINKS. Fig. 3.

made in a very short time by a blacksmith, or any farmer who has a workshop and a portable forge.

Relief for Bog-Spavin and Thorough-Pin.

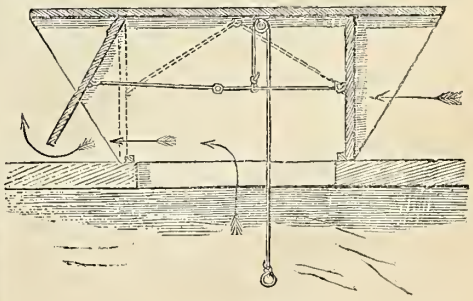
Bog-spavin, and thorough-pin, which are in reality the same disease, differing in position only, and that very slightly, may be considered as incurable. But like many chronic disorders, they may be very much relieved by proper methods. They are caused by an inflammatory condition of the synovial membrane of the hock joint, and are chiefly located in the vicinity of the junction of the bones of the leg, or the capsule between the tibia and the astragalus. This inflammation may be primarily caused by sudden shocks, or by continued strains from hard work, and the troubles are common amongst those horses which are of a lymphatic constitution, soft boned, or hereditarily subject to scrofulous or inflammatory conditions. They are also found lower down the leg, in which case they are the result of inflammation of the sheath of the tendons. They do not always cause lameness, except when the horse is first brought from the stable, and after a short time the stiffness may pass away. At other times there is great heat and tenderness in the parts, and the animal is decidedly lame. The best treatment is by cold applications and pressure upon the part. Blistering, which is sometimes resorted to, generally increases the trouble, and may cause a permanent thickening of the tissues, and a stiff joint. Pressure is best applied by a sort of truss, or strap, provided with a single pad in case of spavin or wind-gall, or double pads in case of thorough-pin, which is simply a spavin or wind-gall, so placed that the liquid which is gathered in the sac or puff, may be pressed between the tendons or joint, and made to appear on the opposite side of the leg. In this case it is obviously necessary to apply the pressure upon both sides of the leg, and a double pad strap will be needed, of the form shown in the engraving. A common broad leather strap, lined with flannel, or chamois leather, to prevent chafing, is used; pads of soft leather, stuffed with wool, are sewn to the strap, and at the exact spots where the pressure is to bear, discs of several thicknesses of soft leather or rubber, are affixed. The pads must necessarily be made to fit each individual case, as success will depend upon their properly fitting the limb. The pads should be worn continually until the swelling disappears, and meanwhile, at least twice daily, the parts should be bathed for some time with cold water, and cloths wetted with cold water, with which a small quantity of ether has been mixed, should be bound around the parts, and the pads buckled over them so tightly as to exert a considerable pressure. Absolute rest is necessary while the animal is under this treatment.



SPAVIN PAD.

An Automatic Ventilator.

The objection to fixed ventilators in roofs of barns and stables is that they require to be closed in stormy weather, when they are most needed. A self-acting ventilator, one that will close itself upon the side from which the storm beats, and open itself upon the other side, and will change as the wind may change, will do away with the only objection to these necessary adjuncts to the stable. Such a ventilator is here illustrated. It consists of a lengthened hood, which may be placed upon the peak or the side of the roof, the top being longer than the bottom, and projecting at each end as a protection against storms of rain or snow. A door is hung by hinges at the top at each end, and opening outwards only. The doors are connected by means of a rod, jointed in the middle by an ordinary hinge, fastened on the upper side. This rod is of such a length that both doors cannot be closed at the same time, but when one is closed, the other is pushed open. The effect is, that when the wind blows in at one end of the hood, the door at that end will be closed, and the other door opened, leaving a passage for the escaping air from the stable. If the wind changes, the position of the doors will be reversed, and the air passage will be clear continually. The action of this ventilator is shown by the arrows, one of which indicates the direction of the wind outside, by which one door is closed, and the others show the direction of the



AUTOMATIC VENTILATOR.

escaping air. When it is desired to close the ventilator, the cord, shown with a small weight at the

end, is pulled; this passes over a pulley, and raises the hinged joint of the connecting-rod, as shown by the dotted lines, and closes both the doors. By having the sides and roof of the hood glazed, it will make a very good skylight, and serve as a substitute for windows, which are not always desirable in stables; a diffused light coming from above being better than direct light from the sides.

A New Method of Fastening Tugs.

The ordinary buckle-fastening for tugs is very inconvenient, and difficult to open, or take apart,

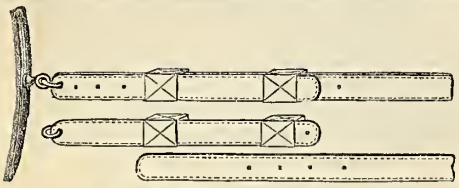


Fig. 1.—FASTENING FOR TUGS.

when necessary. A fastening that is equally as secure as the buckle, and that can be loosened in an instant, would be very desirable for tugs, traces, and other parts of the harness, that become stiff by long usage and want of cleaning and oiling. Such a fastening has been introduced by the English harness makers, and has been recently described by the English Saddler's Gazette. It is very simple, and can be readily applied to a tug or a trace. It consists of a sliding loop, either of metal or leather, passed on to one of the straps, and on the other strap one or more pins, which fit into holes in the first strap, similar to those made for the ordinary buckle. When the two straps are brought together, and the pin or pins inserted into the holes, the sliding loop is drawn over the joint, and holds it firmly together. Figure 1 shows the manner in which this is done; the lower strap, *B*, being shown in separate parts, and the upper one as joined together. Figure 2 represents a shaft-strap detached. When fastened, the pin is placed in one of the holes, and the loop is slipped over it, thus securing it firmly and instantaneously. By the use of this method of fastening harness, much time may be saved, and in case of a fall of a horse, the harness may be loosened very quickly, as, however great the strain upon the straps, the moment the loop is slipped from over the pins, the straps fly apart at once. This prevents the necessity for cutting harness in case of accidents. These pins and loops can be readily made, and to prevent the loop from slipping, there should be a small spring fixed inside, which presses upon the side of the straps. They may be attached to all parts of the harness, wherever buckles are used.

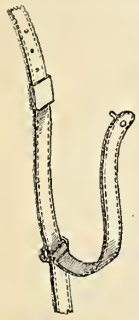


Fig. 2.—STRAP.

THE VICTORIA COLONY, KANSAS.—Mr. George Grant, of Victoria, has recently returned from England, accompanied by twenty-one persons who have purchased homes in the colony. These are all possessed of ample means to make substantial improvements and to stock their farms, of at least 640 acres, with sheep or cattle. A like number are to follow in a few weeks. Mr. Grant has brought with him a bull and five cows from the Short-horn herd of Queen Victoria, in whose honor the colony and town has been named, and who has signified her appreciation of the compliment by giving Mr. Grant special facilities in selecting the choicest animals from her herd. Some pure bred Polled Angus and West Highland cattle are also on the way from Scotland to Victoria. The cattle will be taken to the Centennial Exhibition at Philadelphia, before they are sent to Kansas. The success of Mr. Grant's enterprise is now assured, and his experiment of establishing pure bred herds of cattle and flocks of sheep on the western prairies, has met with entire success. We learn that during the past winter everything at Victoria has progressed very favorably.

Hanging for Sliding Barn-Doors.

No door is so convenient for barns, or stables, as one that is hung upon rollers, and can be pushed to one side, occupying practically no space, and being entirely out of the way. Such doors cannot blow shut, or open, as hinged doors will do in gusty days, to the ruin of the hinges, if not of the doors themselves, and frequently to the injury of the farm animals which may be in their vicinity. Bottom rollers are objectionable, as they will become clogged by the snow in winter, or with litter at all times. The doors should always be hung by means of rollers or wheels attached to the upper part, and these should run upon a rail of hard wood, or what is preferable, of iron. Figure 1 shows the manner of fastening the rollers to the door; *a, a*, represents a part of the upper frame or batten, and *b, b*, the boards of the door; *c, c*, is the strap of strong iron, which is fastened to the door by two bolts, and to which the roller wheel *d, d*, is also bolted. This roller runs upon the rounded edge of the bar or rail *e, e*, which is bolted to the wall of the building, at a sufficient distance from it to permit

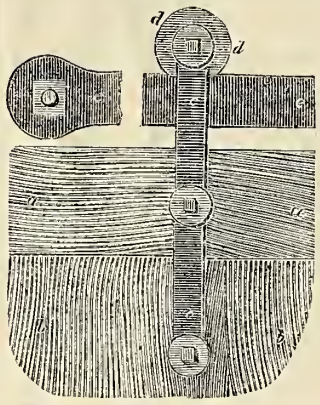


Fig. 1.— HANGING A ROLLER.

—Fig. 2.

the free movement of the roller and the door. The doors should be made in halves, opening to the right and the left. The lower edge of the door should traverse a groove made in the door sill, and it would be a great help if a few small friction wheels were provided in the sides of the groove, upon which the door would impinge as it traversed back and forth. Figure 2 shows a section of the door, the reference letters being the same as in figure 1, and also the manner in which the straps embrace the door and the roller. This method of hanging doors is recommended by Mr. R. Scott Burns, an English agricultural engineer and architect in a communication to *The Country*, and we doubt not will commend itself to farmers in this country as being both substantial and convenient.

Our correspondent, L. D. Snook, of Yates Co., N. Y., sends us a few hints about barn-doors upon rollers, which are appropriate here. He writes as follows: "One objection to barn-doors upon rollers is, that they do not shut closely; this is overcome by nailing a vertical strip, figure 3, *B*, three inches wide, to the outside edge of one of the doors, and projecting an inch and a half over the other door; this prevents a direct air current from entering the building, and should be attached to the door on the side from which the heaviest storms come, and nearly all snow and rain will be excluded. Three-inch strips, *E, E, E, E*, an inch and a quarter thick, are nailed on the inside of the door, as shown, four connecting strips or arms, *T*,

Fig. 3.—SECTION OF DOOR.

T, from 8 to 12 inches wide and 1 inch thick, are used to nail the doors to. The usual practice is to use parts *T* and *E* of the same thickness, and if the door warps but a $^1/_{16}$ of an inch, it will rub against the side of the building when in use. If the strip *E* is half an inch thicker than the part *T*, the door will move freely. For doors already in use, that are warping, the appliance as shown in figure 4 is suggested. A firm scantling, *M*, is bolted to each side of the door at *S, S*, and will bring it into good running order again if sprung outward, if the reverse, a bolt should be attached to the middle with the nut outside. Matched siding is preferable for boarding up as far as the door runs, battens are liable to become loose, and the door soon shatters

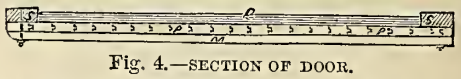


Fig. 4.—SECTION OF DOOR.

or knocks them off entirely. A vertical strip, three inches wide and half an inch thick, is nailed against the door post outside, which is immediately in contact with strip *E* when the door is closed. Large sized rollers are preferable for heavy doors, as they last longer and run easier.

Draining Wet Meadows.

There are many pastures and meadows which require partial drainage, but do not necessarily need a regular system of tiles, which might cost more than the value of the land when drained. Drainage is often necessary, but there are cases in which thorough work is neither needed nor possible. Meadows often have wet spots of a few square rods, caused by springs which come to the surface, and these overflowing, spoil the surrounding surface for a considerable distance, and we are often asked how to drain such spots at a reasonable expense. The following plan is suggested as applicable to many such cases: Figure 1 represents a number of wet, swampy spots in a field. From each of these a sub-drain is dug, to a central drain, which may either pass through the whole field in such a direction, or in such various directions, as to connect the sub-drains, and gather the water into one main drain. At each spring or swale, a well should be dug, the bottom filled with stones, and the upper part with gravel, and from these wells the tile drains may be laid, as shown at figure 2, conveying the water into the main drains, which should be of tile of sufficient capacity. That the water of the drains, which is generally the best and purest spring

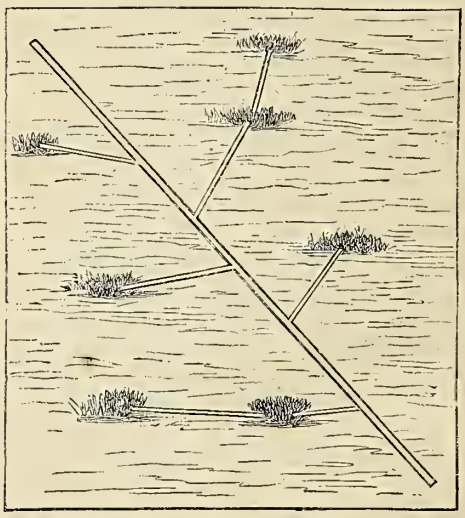


Fig. 1.—DRAINS IN A MEADOW.

water, and flows continually, may be utilized, shallow wells or pits may be sunk on the course of the main drain, wherever they may be desired for watering stock. The well may be made as shown at figure 3. It should be sunk a few feet deeper than the drain, and may be filled with large stones and gravel. The sides may be curbed with boards to prevent the earth from falling in, or the well may be stoned up, and the drain on one side will remove the overflow. A pump may be put into the well, and a movable cover placed

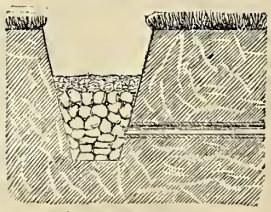


Fig. 2.—DRAIN.

over the curb, so as to permit access to the drain when it is necessary. In this cheap manner the surface of many a wet, unwholesome pasture may be dried, and the water that would otherwise be a nuisance and an injury, be rendered serviceable; and both may be done at a very moderate expense.

CORN-FODDER IN FRANCE.—The French farmers are growing Indian corn for fodder very extensively. The fodder is preserved in pits and trenches, as has already been fully described in the *American Agriculturist*. The variety of corn hitherto grown for this purpose, has been that known as the "Caragua," supposed to have been introduced from Central America. Now the common American "horse-tooth" corn is imported, and is planted in place of the variety formerly used. The fodder from this seed is considered superior, and a large business will probably be done in importing seed, as the French farmers so far have not been able to ripen their own. The cost of the seed to the French farmers is about $1.60 per bushel.

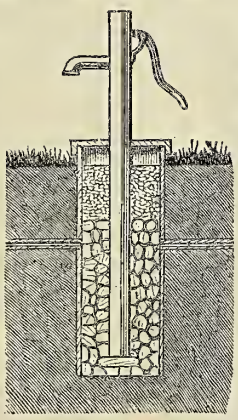


Fig. 3.—PUMP.

Growing Flax for Export.

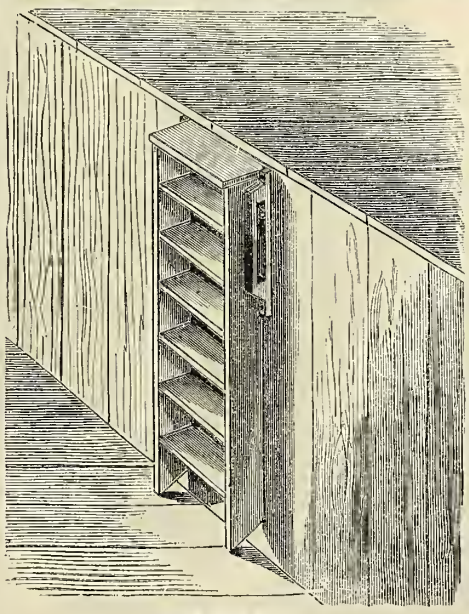
Some statements about the growth of flax for export, that are calculated to mislead, have recently been widely published. It would be a costly mistake if farmers should be led to raise flax with the expectation of finding a foreign market for the fiber that should be profitable at once, both because we cannot expect to compete with those producers who are nearer to the manufactories, and because it is certain that to raise raw material here to send abroad, and to buy manufactured linens abroad for use here, is a losing business. By and by we shall manufacture all the flax we can produce, but before that time comes we must have the fiber, else manufacturers will not be induced to build mills to spin and weave it. Farmers may therefore grow flax fiber for shipment to foreign countries if they will, but the returns will be but small at first. This is inevitable. To commence the business, will lead to a loss at first, but doubtless the comparatively small loss for a few years would be an ultimate gain, not only for farmers, but for the artisans who would work in the mills, and for all who would use the linen goods, both fine and coarse, which would be manufactured. As it has been with the cotton business, so it is likely to be with the flax and linen business.

The Langshan Fowls.

Mr. C. W. Gedney, of Bromley, in the County of Kent, England, in a communication to *The Country*, an English journal, describes a variety of Asiatic fowls known as the "Langshan" breed, and gives a portrait which we reproduce on p. 220. These birds are natives of the extreme northern part of China, where most of the fowls, both wild and domestic, are black, and where the winters are very severe. Mr. Gedney resided for some years in that country, and professes to be well acquainted with the habits and character of these fowls. He states that they are entirely different from the Black Cochin, and that their native home is 1,000 miles distant from Cochin China, from whence the latter birds have been brought. The Langshan fowls are extremely hardy, so much so that a brood of young chicks which were hatched last January, and were exposed to all the severe weather of the winter, survived its inclemencies without the loss of a bird. These birds are erect in carriage, have larger combs, and more feathered tails than the Black Cochin, and are more active, hardy, and vigorous. A cockerel of this breed, seven months old, will weigh, if fattened, 10 to 12 lbs., and a pullet of the same age 8 to 9 lbs.; the flesh is well flavored and tender, and thickly laid upon the breast, the skin is clear white and transparent, and the bone very light and fine. The legs are of a bright slate color, and pink between the toes, and the plumage black with a vivid beetle-green reflection. These birds were first introduced into England in 1872, by an officer of the British army, Major Croad, of Sussex, who received them directly from a relative living in the northern part of China. Since then a second importation has been received in England, and Mr. Gedney states that the breed has been used to improve the Black Cochins. Since the opening of the Suez Canal, by which the voyage from China has been much shortened, the importation of fowls from that distant part of the world has been rendered much easier, and these birds will probably become much more abundant than they are at present. Mr. Gedney sums up the merits of these fowls as follows: "Extreme hardiness, rapid growth of chicken, great size combined with small bone, exquisitely white skin, and flesh of the same purity of color, full breast, delicacy of flavor, and possessing none of that dryness so common to most of the large breeds. As prolific winter layers of large rich eggs, the Langshan hens will hold their own against all comers, whilst they lack that intense desire to sit which is so essentially a characteristic of the Cochin." In short he considers that they "are the finest and most practically useful birds ever brought to England."

Movable Steps for Barns or Cellars.

Some time ago, when visiting the Ridge Creamery of Messrs. Freeman & Co., near Rome, N. Y., we noticed a novel and very convenient fixed step-ladder, which served the purpose of a stairway, without occupying so much room. This arrangement is very convenient for granaries, barns, stables, cellars, poultry-houses, workshops, and wherever space is valuable, and stairs or steps are needed to reach an upper floor. It consists, as shown in the engraving, of the front part of an ordinary step-ladder, which has a pin fixed upon each side, at the top. These pins are embraced in slots, which are fastened to the wall, and in which they work up and down. When the steps are in use, and the foot is extended upon the floor, the pin is at the bottom of the slot; when not in use the steps are pushed up against the wall, occupying but little room, and the pins are at the top of the slot, as shown in the engraving.



STEPS FOR BARN.

CORN CROPS IN OHIO.—"R. J. K.," Clark Co., Ohio., writes that P. Love, of Clark Co., harvested last season over 3,000 bushels of corn from 40 acres, and from another field of 20 acres 1,600 bushels; also that the crop of G. Detrich, in the same county, averaged 86½ bushels per acre.

Packing and Shipping Berries to Market.

BY C. W. IDELL.

BASKETS.—The most popular of the round baskets now in use, are the Cook, and the Beecher, although there are others similar in style, which answer a good purpose. Of the square baskets, the American, and others of the same shape, are used. It is generally conceded by dealers and shippers, that no baskets or boxes with upright sides, are desirable. Shippers object to them more than retailers.

If strawberries, exclusively, are to be shipped, it makes no particular difference which baskets you buy, pints or quarts, but should you have either raspberries or blackberries to market, the pints are to be preferred. The crates should be neatly marked with the owner's name and shipping station, and also that of the firm to whom they are consigned. Every crate should have a good lock or hasp and staple, more to protect the contents when returned, than the fruit. The practice of nailing cards upon the crates is objectionable, as they are easily torn off, causing errors in delivery, and in the returning of the crate to the dealer.

CRATES.—Their lids should never be closed until the last moment before shipping, and the crates should never be allowed to stand in the sun after they are packed. As a general thing the top layer of berries receives more damage, after being packed, than any other, and I presume it is due to the fact that the space between the top layer and the lid, is greater than that between the other layers, and this allowing the fruit to move, it consequently becomes damaged; besides this, the heated air, being confined more or less in the top of the crate, softens the fruit. Every grower should notice this point in his crates, for even in those of the same make they vary in this respect, and if they are not ventilated, they should be altered. When the space is not very great, it can be remedied by filling the top cups so full that the lid will touch them when closed. Care should be taken while loading and unloading, that the fruit receive no rough handling, and should the roads be dusty, let the crates be carefully covered, to prevent the dust from entering them and damaging the fruit.

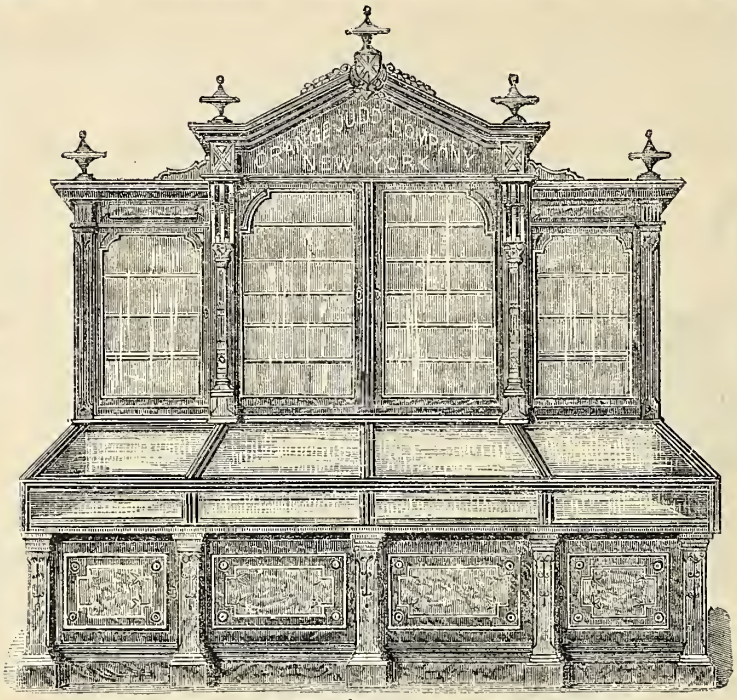
SHIPPING.—In shipping, either in cars or by boats, see that your fruit is all placed together; the cartmen can get it the quicker on arrival, which, should the conveyance arrive late, is a very important item to the owner. I am aware that growers complain greatly that their fruit is damaged during transportation, but I am inclined to think that much of the injury is done while is is still in possession of its owner, by careless pickers, rough handling, or through the neglect of those who have the care of it.

When unable to fill a crate with one kind of fruit, or desiring to send two kinds in a crate, always place a slip of paper on the top layer, containing the names of the varieties, and the number of quarts of each, so that the dealer on opening the crate, can ascertain the contents at once. Even experienced shippers are careless about this, and their neglect often causes dealers much trouble to rectify the mistakes which result. With each shipment of fruit, send a statement of the number of crates forwarded, and the quantity and variety they contain. This may be placed upon the top layer of the fruit, or tacked upon the inside of the cover; then mark "Bill," in large letters, upon the top of that lid; the dealer will then know where to look for the invoice.

Every shipper should keep a book *at home*, for the purpose of charging each shipment to the dealer to which it is sent, stating the number of packages, and the quarts or pints of each variety, so that on receipt of the bill of sales, he can place the amount in the proper places, and at the close of the season the net proceeds can be readily footed up. Do not depend upon the loose bills you receive, for they sometimes get lost, and then you must apply to the dealer for duplicate bills.—227 Washington St., New York.

At the Centennial.

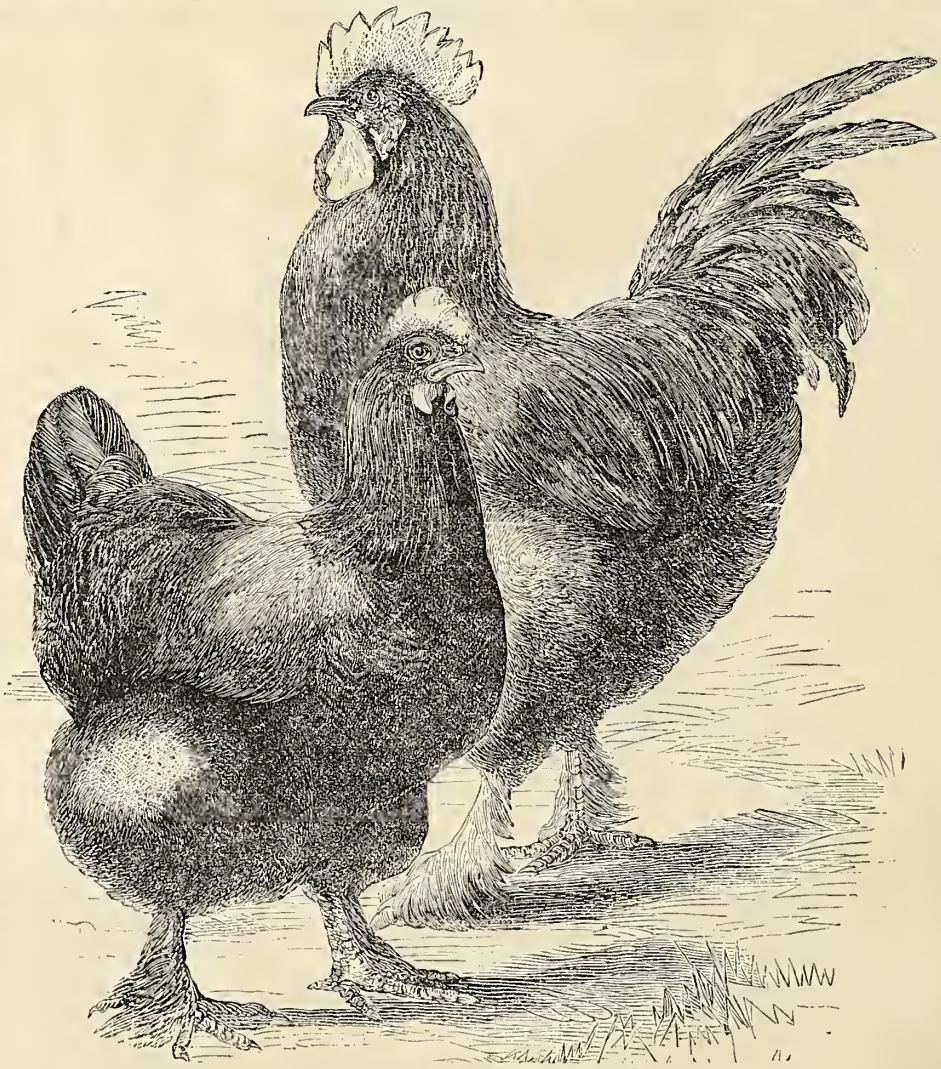
Of course the *Agriculturist*, being essentially *American*, not only in title, but in reality, is on exhibition at the great Centennial Exhibition as an American production. The current numbers are to be found in the department devoted to papers and journals of all kinds. But publishing the *American Agriculturist* is not the only business of the "Orange Judd Company." They are the manufacturers and publishers of nearly all the works upon agriculture and horticulture produced in the country, and also publish works upon rural architecture. Besides this, they are General Agents for Crandall's blocks and toys, a business which years ago began by their taking some of Mr. Crandall's Building Blocks for children to give as premiums, and has since grown to proportions, which, for a thing of its kind may, without exaggeration, be called immense. These three branches of their business are illustrated by an Exhibition in the department appropriated to books. In the south-west corner of the section in the Main Exhibition Building, assigned to the American Book Trade, is the case, of which our engraving is a representation. It is a very elegant affair, of black walnut and plate glass, with a glass-covered projection, as shown in the engraving. The panels in front are very elegant specimens of what is known as "French walnut." The case is ten feet long, and about the same in hight at the center. It will be filled with bound volumes of the *American Agriculturist*, and Rural Books, and specimens of Crandall's Blocks for Children. Our friends who visit the great exhibition, will find at this case an epitome of what is to be seen at 245 Broadway, only the books shown there in a few specimens, are to be found at the store in hundreds and thousands. It is not likely that many who visit the exhibition from a great distance, will be content to be so near New York, without giving a few days to the great city, and while the Case at the Centennial will give them an idea of the great variety of such publications, they can inspect them much more conveniently at 245 Broadway, where they will be welcome, whether they wish to purchase or not. But few have an idea of the great number of works upon agriculture and kindred subjects now published in this country. Twelve years ago the number was comparatively small, and many were reprints of English works. Now there are few departments in which there are not works by American authors of acknowledged experience.



THE ORANGE JUDD COMPANY'S DISPLAY AT THE CENTENNIAL.

The "Leaf-Plant."—Bryophyllum.

The name "Leaf-Plant" is not a very descriptive one; "Leaf-sprouting Plant" would tell the story better, but is too long, though very nearly a translation of the botanical name, *Bryophyllum*, which is from Greek words for *I push* or *sprout*, and for *leaf*. After all this, it will be inferred that there is something peculiar about the leaves of the plant, but before describing this, we will first speak of the plant itself. Bryophyllum belongs to the same family with the House-leek, and Live-for-ever, so well known everywhere, and the Cotyledons, Echeverias, and other succulent plants now much used in garden and greenhouse decoration; there are four species, natives of tropical Africa and other warm countries, the one in common cultivation being *B. calycinum*. This, when set in the open ground, becomes a vigorous, stocky plant, two to three feet high, its stout stem becoming somewhat woody; the leaves are thick and fleshy, and on young plants and shoots, are simple, but the older plants have divided leaves of three to five leaflets. The flowers are in a large terminal panicle, the branches of which are very symmetrically arranged, and from which hang the numerous flowers, which, though individually not very brilliant, are in such profusion and so peculiar, that as a whole the cluster is very effective. The flowers are a very long while in developing; the buds being showy, the flowers, in all their stages, last for several weeks. When fully developed, the flowers are quite two inches long, the large bladdery calyx being a little over half that length; the calyx attains its full size long before the flower opens; in this state it appears like an oblong berry of some kind, the upper part, and the side next the light, being striped and splashed with dull red, much like the skin of some apples. At length the greenish, 4-angled corolla appears, with four spreading, reddish, or purplish, pointed lobes. When the leaves are quite ripe, they are readily broken off, or drop spontaneously—and after lying on the ground for a while, small buds appear at most of the notches on their margins; roots soon push out from these, and the little bud elongates and forms a tiny plant, as shown in figure 2. This sprouting sometimes takes place while the leaves are yet attached to the plant, and it affords a ready means of propagation, as any leaf, not too young, may be made to produce a number of new plants by placing it on moist earth, and we have seen this sprouting take place upon a leaf pinned against a window. While there are not many plants which


THE LANGSHAN FOWLS.—(*See page* 219.)

naturally propagate themselves in this manner, quite a number of greenhouse plants may be made to do so artificially, and for some begonias, gloxinias, and several succulent plants, it is the method resorted to by gardeners to multiply them; passion-flowers, oranges, and even roses and geraniums, have been made to form young plants from their leaves, but with these, other methods of propagation are more practicable. In Bryophyllum, the leaf contains sufficient nutriment to supply the young plants until they get two or three inches high, but if it is desired to save them, they should soon be set out in good soil. Though not rare in collections, and as a window plant, the Bryophyllum is not often seen in flower, mainly for the reason that it is almost always kept in pots. By the following treatment we always have a fine show of flowers: the young plants are set in the open ground in spring, where, after a while, especially late in the season, they grow with great rapidity, and become very robust; before there is danger of frost, the plants are taken up and potted, a change which they mind very little, and placed in a greenhouse, or window, for the winter, where they will require to be but sparingly watered. The plant is well calculated to endure the dry and heated atmosphere of our dwellings; its stately appearance when well grown, and its interesting manner of propagation, make it a desirable window plant.

THE LEAF-PLANT.—(*Bryophyllum calycinum.*)

THE JUJUBE.—(*Zizyphus vulgaris.*)

LEAF WITH YOUNG PLANTS.

The Jujube.

Among the exotics that have been introduced from other warm countries into our Southern States, is the Jujube, which has been sufficiently long established in several localities to produce fruit. The plant, belonging to the same family with the Buckthorn, is botanically *Zizyphus vulgaris;* it is a native of Asia, and is called by the Arabs *Zizuf*, which, being Latinized, affords the botanical name, and it is said that the name, jujube, is from the same word through the French. It, when fully developed, forms a handsome tree 20 or 30 feet high, but is of very slow growth, and is more frequently met with as a shrub. The branches, which are remarkably slender, are furnished with sharp prickles, which disappear with age; the oval, alternate leaves are thick, of a shining green, and strongly nerved. The flowers are very small, yellowish-green, and inconspicuous, and are succeeded by a fruit about the size and shape of an olive; this, in ripening, first becomes yellow, and at length reddish-brown, and contains a hard, bony stone, surrounded by a fleshy pulp. When the fruit is gathered before complete maturity, and while yellow, the pulp is pleasantly acid, and it is used in Europe as a dessert fruit, but when perfectly ripe, it is very sweet, and in this state is used by French confectioners to make pastes, syrups, and other confections used to allay coughs, a purpose for which the dried fruit is also eaten. Jujube paste, made from the pulp of the fruit with gum and sugar, was formerly imported, but it was soon imitated by a paste made of gum and sugar, without the jujubes, a little tartaric acid being used to give a slight acidity; later it was made without any gum, and the article now sold as jujube consists of gelatine and sugar, to which tartaric acid and some aromatic oil is added to flavor it. In this country, the fruit is not likely to become very popular, as we have an abundance of better kinds, and the tree must be classed with the ornamental rather than with the fruit trees. In France, the tree is about 30 years in coming to full bearing, and on this account the few established plantations are found profitable, as there is a demand there for the dried fruit, which is not likely to exist here. The specimens from which the engraving was made were brought us, several years

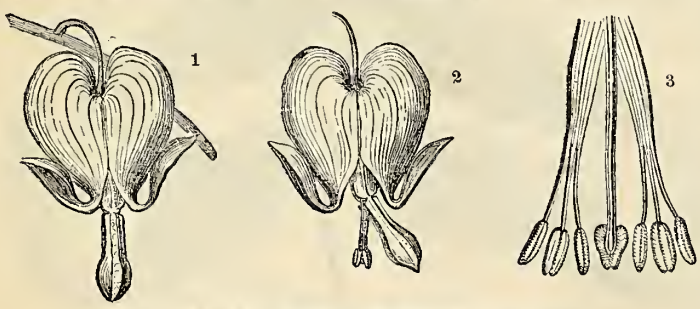
ago, by P. J. Berckmans, Esq., of Augusta, Ga., in whose extensive nursery it has come into bearing. We do not know how far north the plant will endure the winter; in Europe the tree will live in the north of France, but it bears fruit only in the regions where the olive succeeds. It is raised from seeds, which are very slow in germinating, but more frequently from suckers, which come up abundantly around the base of the old trees.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE V.—DICENTRA OR BLEEDING-HEARTS.

We have not gone through with half the kinds of flowers in which cross fertilization is, in some way or another, provided for. But, not to harp too long upon one string, we are disposed to vary the theme, and to take up a common blossom of our gardens at this season, which anybody would say was intended to fertilize itself. *Dicentra spectabilis*, one of the commonest, as well as prettiest, of our spring garden flowers, is of rather recent introduction from Japan, and the Japanese got it, as is thought, from the north of China—a climate so like that of the Atlantic United States that it grows here as if "to the manner born." It came under its scientific baptismal name of *Dicentra*, meaning two-spurred in the vernacular, mixed up for awhile with an *alias* of Dielytra, which might mean a two-shelled bug, or clam, but has no appropriate meaning whatever for this flower in any way, and happily is now got rid of, except in some catalogues.



Figs. 1, 2 and 3.—FLOWER OF DICENTRA ENLARGED.

And for a popular name somebody in this country made a good hit when they called it *Bleeding-heart*. The flowers, especially before opening, are heart-shaped and red or flesh-color, and as the tall and queenly plant hangs out a long row of them, dangling along one side of a spreading branch, some fanciful and love-struck swain may have likened it to a beautiful but cruel maiden, haughtily displaying her conquests.

But, to come down to the flower, and to our prosaic narrative. Here at length we have a flower which is sufficient unto itself, and need solicit no favors. Figure 1 shows it as it hangs. In the center is a slender pistil with two rows of forming seeds concealed within ready to be fertilized. It tapers into a style which ends in an enlarged and crested stigma (seen in the middle of figure 3). Directly against and surrounding this stigma, lie six anthers, three on one side and three on the other. They are seen spread out for inspection in figure 3, but in the untouched flower they are all packed close together and in actual contact with the stigma. They are kept there, and everything else is seemingly well barred out by the tips of an inner and narrow spoon-shaped pair of petals, which enclose the pistil between them; their two tips, the bowls of the spoon, put together, and united at the very apex only, so as to enclose a cavity which is just large enough to contain the stigma in the center, and its encircling crowd of six anthers. In the bud, and until full grown, the layer and also spoon-shaped tips of the outer pair of petals, each of which makes half the heart, are closed over the whole. But these soon separate and turn back (as seen in figures 1 and 2); the two inner never separate. But if we pull these open, even on the very day that the outer ones turn back, we may see that the anthers have not delayed to do their part; already they are opening and pouring out a great superabundance of pollen, a large part of which is actually in contact with the stigma, covering it on every side. The case is clear. Here, if anywhere, is self-sufficiency and self-fertilization.

Inevitable as this conclusion appears to be, before we rest in it, we may as well consider one or two things. First, in our gardens, although it grows vigorously, it seeds sparingly, and often not at all. This is not what we should expect of a plant so well adapted for self-fertilization. If it depended on insects, its sterility as a new comer into a foreign country might be accounted for by the absence of the particular insects it was accustomed to and dependent upon, but as a self-fertilizer, wherever it can grow well it ought to seed well. In the next place, the sacs which form the heart-end of the blossom, produce a little nectar, and a deep groove in the narrowed part of the large petals, under the spreading tip, forms an open channel leading into the cavity of the nectar-bearing sac. If we have read our former lessons aright, and if Nature is not at cross-purposes, this means that insects are invited to the blossom; and over and over we have seen the bumble-bee accept the invitation and explore the sac with its long tongue, with apparent satisfaction. It is not easy to believe that free lunches are quite devoid of ulterior object. To settle this, it might be worth trying the experiment of covering clusters of the blossoms with gauze, to see whether they would then set seed at all. This might not be very hopeful, since it seeds rarely and little as it is in this country. But it might be tried on our wild Dicentras, of which we have two in our cool northern woods, humble, but curious and elegant, one of them well known as the Dutchman's Breeches, a long way off from Bleeding-heart in name and association, though the structure of the flower is essentially the same. That seeds rather freely in its native woods, and *D. eximia*, a larger sort, native of the Alleghanies, and not rare in gardens, sets seed abundantly. It would be well to know if these would do so when insects were excluded. The same may be said of the wild species of *Corydalis*, which are on just the same plan as Bleeding-hearts, except in having only one sac or spur to the flowers, and which seed abundantly. If they do so by self-fertilization (which is what they seem specially intended for), they would do the same under a gauze covering. If when so protected they are sterile, or sparingly fertile, then we may conclude that the visits of bees, which they appear to court, and which are often seen about these flowers, are somehow useful to them in the way of fertilization. The experiment has been tried in Germany. The Corydalis covered by gauze set very little seed; those by their side left accessible to bees and the like, set seed in full abundance.

Finally we may notice what happens when an insect of proper size, such as a bumble-bee, visits the flowers of Bleeding-hearts. Holding fast by the shelf formed by the spreading tip of either sac-shaped or spur-shaped petal, the act of exploring the sac brings the head of the insect forcibly against the central piece, formed of the two narrow, spoon-shaped petals, with barely cohering tips; these are pushed off to the opposite side, while the enclosed parts, the stamens and pistil, stand in their position, nearly as in figure 2. This, it will be seen, brings the bee's head into contact with the anthers, covered with loose pollen, some of which adheres and is carried off, brings it also in contact with the stigma; and so, in passing from blossom to blossom, some of the pollen of one is conveyed to and deposited upon the stigma of some other. The arrangement which was supposed to ensure self-fertilization, proves after all to have cross-fertilization in view—at least some cross-fertilization.

But if its own pollen has the first and best chance—being early shed into the cavity, and the conveyance being only occasional—why does not the pistil generally or universally get fully fertilized by the pollen which surrounds its stigma, leaving no chance for the comparatively little which may be brought? First, because (as in the cases described in the first, second, and third articles) the stigma is not ready when the anthers first open; it is only after the flower has been open a day or two that the stigma becomes moist and receptive of pollen. Secondly, there is good reason to think that pollen, in all such cases, is more efficient upon the stigma of another flower than its own. The grounds of this belief will appear hereafter.

The flowers of peas and beans are conundrums of somewhat the same sort as those of Bleeding-heart. Let our readers, especially young readers, try their hand and powers of observation upon them this summer, and upon all other blossoms of the pulse family they meet with. They may find much that is very curious, and enjoy the gratification of finding it out themselves. Not to anticipate them, I will defer my account of these flowers until the close of the summer.

To Prune or not to Prune.

A large stone dropped into a small pool would not make a greater commotion than an address by Mr. Shirley Hibbard has caused among the gardeners and fruit-growers of England. Mr. H. came out, in his usual forcible way, "dead agin" the pruning of fruit-trees; this lecture was regarded as of sufficient importance to be published by three horticultural journals simultaneously; it was the occasion of several editorials, and as to the communications it has called out, the end is not yet. The strange thing about it all is, not that Mr. H. should advocate no pruning, but the fuss and flourish it has caused. An English friend of ours, well versed in all such matters, writes us that it is "the horticultural sensation of the year." Those British horticulturists who read American journals, must have seen that the let alone system has long had its advocates among our fruit-growers, and those who practice it too, and a paper on the impropriety of all pruning might be read without causing a sensation in a meeting, much less in the whole country. We are young in horticultural matters, but we have long ago got by all that, and the effect upon the English people would look ludicrous, were not all concerned in such sober earnest. It takes a great deal of bad pruning to prevent a fruit-tree from bearing, and one will, if given time, make some returns in spite of every neglect. There are two extremes, the one of the French and Belgians, who resort to every possible device to make trees grow in every form and manner other than their natural one; and the other of letting the tree have entirely its own way. Between these there is every gradation; Mr. Hibbard himself goes so far as to advise "pulley pruning," which is his name for hanging weights upon over-vigorous shoots to bend them, and is no pruning at all, but training. Our notion about the matter may be briefly given. Some children are ruined in health by over-study, but no one would recommend as a remedy that all children should grow up in ignorance; yet this would be no more absurd than to insist that because some trees have been injured by pruning, the knife and saw should be abolished. We do not doubt that many have pruned too much, and are quite sure that if proper pains were taken with young trees at the start, we could get along with very little removal of branches. Too often one plants an orchard, the trees grow as well as the conflict with the ends of whiffle-trees, and an occasional browsing will allow, after a number of years the owner thinks they should bear; he is told that his trees must be pruned before they will bear, and he, without other knowledge than that pruning means cutting, goes at them himself, or hires some jobber to do it for him, and if there is a large heap of brush, he thinks the wages have been earned. But the trees? They are actually frightened into bearing a small crop,

and thus show that pruning was the thing they needed; but they have to go to work and repair damages, and several years are lost. But the trees have been pruned, and as impartially as Mrs. Squeers dispensed her brimstone and molasses, if they didn't need it then, they might at some time. No pruning at all would be better in the end than this; but it would have been vastly better than either, had the trees been properly pruned at planting, and yearly cared for to keep them in the right way. Common sense is as necessary in the orchard as elsewhere, and unless one has a good and satisfactory reason for cutting off a limb, by all means let it remain, even if it results in adopting Mr. Hibbard's new (?) method of not pruning. Still, were we to accept the idea that all pruning is injurious, there will occur cases where it is proper to "do evil that good may come," and we may prefer to sacrifice something of the longevity of a tree to secure some immediate benefit, and in this as in other matters, the safe course lies somewhere between the extremes.

A New Salad Plant—Witloof.—Some of the English dealers have advertised with high praise a bran-new salad, under the name of Witloof; they tell of its great hardiness and vitality, and even hint that it is good for other things besides salad, but they quite fail to tell what it is. The engravings give no clue, as they look much like a small Cos Lettuce set upon a horseradish root; we were getting quite anxious over the matter, but at last a correspondent of the Gardener's Magazine, sets the matter at rest by saying: "Under the name of 'Witloof' the trade are offering us a remarkably good stock of chicory."—Now we know all about it, it is our old friend, "*Chicorée sauvage amelioré*," and *Barbe de Capucin*, own brother to Endive, and those who like their salads so bitter that quinine will be tolerable after it, can try it. But why not say what it is at once?

Doct. Hogg's Classification of Apples.

The eminent British pomologist, Doct Robert Hogg, has recently added to the several attempts that have been made to classify apples. The idea is, to fix upon such a system of grouping the fruit, as will allow one to ascertain the name of a given specimen, by comparing its characters of shape, color, etc., with a systematic key, in a manner similar to that followed by a botanical student in determining an unknown plant. Doct. Hogg makes four principal groups, founded, 1st, upon the eye or calyx; 2nd, upon the seed-cells, whether they meet upon the center or not; 3d, the shape of the calyx-tube, or that cavity just below the eye, or calyx-segments; and 4th, the stamens, or rather the dried remains of these that are found in the calyx-tube, their position, whether attached to the base, sides, or margin of the tube, being taken into account. These primary groups are subdivided into others, founded upon color, form, and other characters. Of course, a system proposed by so high an authority, is sure of respectful consideration, and it has received the recognition (regarded by some as premature) of the Royal Horticultural Society. As the author has subjected only 300 of the best known varieties to the test of his system, and as of these nearly one-third fail to fit, but have to be placed under two, three, or more main groups, in order to meet all their departures from the regular structure, it is evident that the system can not be regarded as a very precise one, and that it is quite as open to objections, as those which have preceded it. It has already been criticised, very mildly and fairly, by the *Gardener's Chronicle*, and the most that can be said of it is, that it will add to, without enriching, the literature of pomology. The great obstacle to any satisfactory classification of fruits, is in the fact that the objects themselves are variable. Through long cultivation fruits are in an unnatural condition, and all their parts are enlarged and exaggerated, and the characters which would be of value in the wild fruit can not, in these, be regarded as permanent.

Every one who has much to do with fruits, would heartily welcome any fairly accurate classification, and we regret that the hope excited, when it was announced that Doct. Hogg would publish one, is not borne out by an examination of the system itself.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Plenty of Flowers.

For the sake of the children have plenty of flowers around your homes. Plant enough so that it may be no sin for the little ones to gather large handfuls and make playfellows of them. When I was a little girl, it was not generally understood that gathering a part of the flowers caused the plant to continue its blooming longer, and to produce finer flowers than if all its blossoms were allowed to remain on the parent stem and ripen seed. It was then a "naughty" deed for children to pluck any but the most common flowers. Little ones cannot always be trusted to help themselves from the flower beds as they may choose, but there should be beds of bright flowers where there will always be some to spare for the children. One little girl, not four years old then, used to ask me for pansies before she was dressed in the morning, every day for weeks, last summer. She could hardly count the fingers on one hand, but I used to let her run out before breakfast and gather three or four pansies. Several times again through the day, she could have as many more, and they all personated characters to her imagination. They were sometimes her children, sometimes her pupils, sometimes the congregation to whom Jack-in-the-pulpit preached. Other flowers figured also in these plays, but I do not wonder that the smiling pansy-faces were most attractive. Children should have their own flower-beds as early as possible, but a great many waste places around the door-yard and back windows and out buildings might be made to blossom like the rose for their sakes, with but little labor.

Diverting Naughty Children.

A few years ago I wrote something on this subject, under another head. The opinions then expressed were not well understood by some of my acquaintances, and I have long had it on my mind to say something further about diverting children from naughtiness, or switching them off from the emotional track they seem to be following, upon one which is safer for them and pleasanter for all. My idea was that a watchful parent might often see when the patience of a child is beginning to fail, or when its temper is beginning to rise, and by a little strategy, prevent an open explosion, and, perhaps, unpleasant correction. One should appear not to notice the child's mental trouble (in attempting to follow out this plan), but should propose some plan to awaken interest, or mention some fact that will arouse attention. In this way the little one may often be led to forget its troubles, just as we find a new plaything for the baby when it is tired of those it has already. When the matter has even gone farther, the naughty child may be diverted safely if you only disguise your policy—but not without some reproof for giving way to naughty behavior if it has already done so. In the same breath, almost, you can say soberly, "There! there! we can't have this noise," and then, with animation, to some one else, perhaps, but so that the one reproved may hear, "Listen! Did some one knock?" or if there is a person passing, or an animal or bird in sight, make a remark about that, and let it be followed up by interesting conversation if possible, or by some change of scene which will interest the one you seek to "switch off" from the dangerous track.

But when a child is kicking and screaming with passion, or is knocking things right and left, it is folly to pretend not to notice its behavior. It is unwholesome for the child, to have others make light of its conduct. For its sake, as well as for the general peace, bad behavior must be discountenanced. Either the child should be put firmly out of sight and left to do its fighting without a spectator, or it should somehow be made to feel that "the way of the transgressor is hard." It always distresses me to hear any one begin to "divert" after the naughty fit is on, in an undisguised way, like this,—speaking complacently to the child, who is outraging the sensibilities of every one present: "Katie! Katie! come here and see what I have got for you,"—without a word of sober reproof.

This is a kind of premium upon yelling. The child who could not get attention by good behavior, has everybody running to amuse her when she makes herself a nuisance. It reminds one of the story of a little girl who stopped in the midst of the most passionate crying and kicking, to ask coolly, "Why don't somebody *pacify* me?" One of Miss Alcott's characters in "Old Fashioned Girl," is a little girl who used to say of herself when she wanted some extra attention, and was seeking it by sulks, "I'm fwactious (for fractious) and must be amused."

Parents sometimes flatter themselves that they never give their children the things they cry for, or never change their "no" to "yes," to stop a child's crying, but they often fall into the mistake of coaxing the crying child's good nature back by offering it something even better than the thing refused. It sometimes happens that some indulgent relation, hearing the parent's refusal, and seeing the little one's distress, comes to the child's relief in this thoughtless fashion. It gives a good mother pain to refuse what her child desires, but if this is done for the little one's good, it affords a natural opportunity for the child's discipline. All should learn, in early life, that many dearest wishes must be denied, though they seem innocent enough in themselves; and it is a very important part of every one's education to learn to bear disappointment well. So when a good parent, who takes every reasonable opportunity to gratify his child, thinks best to deny its wishes, no wise person will try to "pay" the child for its pain, or to stop its tears by bribes. Yet any one who loves to alleviate distress, may seek, by such natural methods as attract no attention, to bring about a happy mental atmosphere, which will work a speedy cure for unhappy children present.

House-kept Women.

Probably it is true, as the wise ones tell us, that we women should have fewer "blues" if we spent more of our time in the open air. In the State Reports concerning the condition of Insane Asylums, it is mentioned as one of the chief causes of the excess of female over male lunaties, that women live in-doors too much, and breathe too little out-door air. Out-door exercise is prescribed as a part of the reasonable cure of most chronic diseases.

Our silly and barbarous costume is one thing that lies in the way of our regular daily exercise out of doors. It is almost too absurd to believe, and yet it is true that hundreds, and perhaps thousands, of good, decent American women wear in their kitchens, and about their daily work, skirts that touch the floor. They make their calico dresses according to the prevailing mode, with under and over-skirt, "caught up" and "tied back" when Fashion says so. When these come to be old dresses, to be worn on washing days, how ridiculous they are! And when they are out of style what silly shapes they have! Others wear dresses made in plain and simple style, which "just clears the floor," or "just touch the feet." But even this more mitigated form of woman's slavery to skirts does not render a woman free to run out of doors at a moment's notice, as a man can, without care and anxiety for her clothing. When the dew is on the grass, when a shower has just fallen, when the walks are muddy, she will probably stay in the house unless obliged to go out. Perhaps she wears slippers in the house, and cannot afford the trouble of changing them for thick shoes, or of putting on rubbers.

Whatever deference to custom may be suitable on dress occasions, all thoughtful women must agree that for home wear no costume is reasonable which interferes with a woman's work, or which makes a daily walk (or much daily exercise) out of doors more of a task than of pleasure.

A housekeeper's work lies in the house. If she has a large family, the customary three meals take

about all of her time, and her daily and weekly round of work takes her full time and strength, so that she has as little incliuation as opportunity to go roaming abroad for exercise. Last summer, for the second time in eight years, I had my cook-stove in a shanty, or rough "lean-to" shed, adjoining the house. How can I ever again be contented to spend a summer with the family cook-stove in a walled-up kitchen, being myself the family cook?

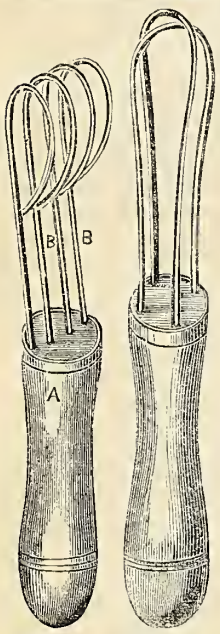


Fig. 1. Fig. 2.
EGG BEATERS.

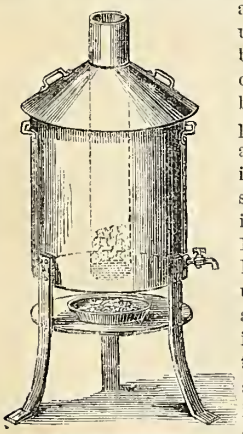
No house is worth the name of home which has nowhere about it a shady porch or airy shed where a housekeeper or a hired girl can sit down in cool comfort, to shell the peas, hull the strawberries, or peel the potatoes, where she can set her ironing table, and wash her dishes without foregoing fresh breezes, and near neighborhood to grass and vines. Thoreau, who had a contempt for such treasures as most mortals love to lay up here below, observed that when a man had compassed his desire and got him a house, it seemed after all to be the house that had got him. So it is with many women—their houses keep them quite as much as they keep the houses.

Ants in the House.

In some localities small, black ants are very troublesome, early in the summer. They get into every sweet and sweetened thing to which they can find access, and though they tumble into the syrup and commit suicide, in droves as it were, by droves are their lessening numbers reinforced. Do they smell out the sugar, and molasses, and preserves? Give them something else to smell. Lay sage leaves or tansy leaves upon your pantry shelves, or in the cupboard, where the sweet things stand, and the fastidious invaders of your sugar-bowl will prefer to go elsewhere in search of food. Only the tightest fitting covers can keep them out. But I am told by one who says she has tried it, that a line drawn with chalk on the shelf around an open sugar-bowl proves an impassable barrier to the ants. A dish set into a saucer or plate of water, is protected from ants. There is a little red ant found in some places, which meddles with all kinds of grease, as well as with sweets.

A Boiler for Summer Use.

During the warmest days of summer, when the heat of the kitchen-stove seems intolerable, a portable boiler that may be used out of doors, will be found very convenient. Such a boiler may be made of heavy tin-plate, as shown in the accompanying engraving. One of convenient size may be 10 to 14 inches in diameter, and 16 to 18 inches high. It should be mounted upon three stout legs, and have a tap soldered into it near the bottom. In the center is a flue of tin-plate, lined inside with sheet-iron, and from 3 to 4 inches in diameter, having a wire grating at the bottom, and reaching a few inches above the cover of the boiler, through the center of which it passes. There are handles upon the boiler, by which it can be lifted and removed from place to place, and handles also upon the cover. A shelf may be affixed to the legs, a few inches beneath the boiler, upon which an ash-pan may be placed. The boiler is heated by a small quantity of ignited charcoal in the bottom of the flue, and the small quantity of fuel required gives out very little heat, beyond what is needed to boil the water. A gallon or two of water may be brought to a boiling heat by this boiler in less than 30 minutes. We have seen these boilers used in cities, where they will be found quite as convenient, as in country houses. They can be easily made by any tinsmith, and are not patented.


SUMMER BOILER.

Some Household Conveniences.

BY L. D. SNOOK, YATES CO., N. Y.

EGG-BEATERS.—Various styles of egg-beaters are sold in the stores, and do their work satisfactorily, but probably half the house-keepers are without any beater at all, but beat the eggs with a common fork or table spoon. An affair similar to the beaters herewith illustrated, will be found greatly superior to the fork or spoon, and quite as useful as some of the patented kinds; it can be made in a few minutes by almost any one, and will be found well worth the little trouble required. That shown in figure 1 is the simplest form; four moderately stiff wires, *B*, *B*, are inserted with holes made in handle *A*, the ends being curved over as shown in the engraving. The total length of each wire is 9 inches, and the length of the bow or curve, 2 inches, if at the curve the two inside wires be bent so as to stand one-quarter of an inch above the outside ones, it will be more effective. The one in figure 2 is so plainly shown that a description is not needed.

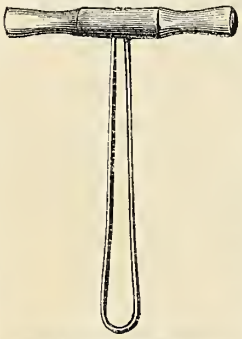


Fig. 3.—CORK-PULLER.

WIRE CORK-PULLER.—When a cork has in any manner found its way to the inside of a bottle, it should be removed before the bottle is used again. It may be easily extracted by means of a cork-puller like that shown in figure 3. It is made by attaching a piece of steel wire, 1 foot long, to a bit of wood $3\frac{1}{2}$ inches long and $\frac{3}{4}$ of an inch in diameter. To use it, force the bow part into the bottle and reverse the bottle so that the cork will be caught by the bow, when it may be readily pulled out. A bit of hoop skirt wire will answer in place of round wire.

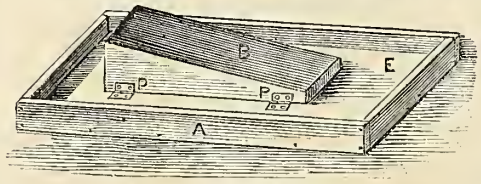


Fig. 4.—KNIFE-CLEANER.

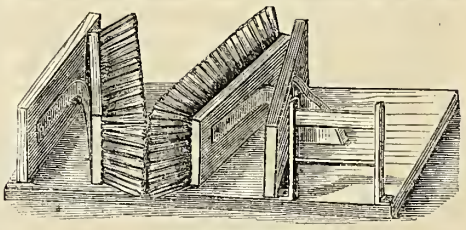
KNIFE-CLEANER.—In the *American Agriculturist* for August, 1875, I gave a very neat and useful knife cleaner, but as it was somewhat complicated, offer the one shown in figure 4, as being cheap and simple. The bottom board *E*, is $\frac{1}{2}$ inch thick, 11 inches long, and 6 inches wide; the side strips *A*, $1\frac{1}{4}$ inches wide and $\frac{3}{8}$ of an inch thick. Near the center of the board is attached, by screws from the bottom, a wedged shaped piece of hard wood, *B*, $1\frac{3}{4}$ inches wide, 6 inches long, $\frac{1}{2}$ inch thick at its smallest, and 2 inches thick at its largest end. The scouring brick, rag, and other materials, are kept in the box. When a knife or fork is to be scoured, the blade is laid flat and lengthwise upon the inclined plane *B*, when the scouring material is applied by means of a rag or brush. [A large cork is better than either.—ED.] The knife is easily kept in position, and the scouring material can be applied with the necessary pressure without the danger of breaking or bending, as by the common method of resting one end only upon the table or board. Instead of fastening the part *B* permanently with screws, it may be hinged as at *P*, *P*, and after the knives are scoured and wiped, the piece may be folded upon its side and the knives polished by passing them over a strip of leather attached to the side, but not shown in the engraving.

Are Women Enemies of Agriculture?

Many will be startled by the above question, and will utter an indignant "No!" Still we must insist that many of these women are the farmer's enemies, but qualify the assertion by admitting that they are only indirectly, and for the most part, unwittingly so. Within a few years the fashion has become common, and we are sorry to say is increasing, of using small stuffed birds, or the head and breast only, or the wings or tail, to decorate bonnets and hats; a bird's wing being a very common ornament for the hats of young girls. This use is not confined to the plumage of the brilliant and highly colored birds, but almost every kind of wing and feather is brought into the service. For every decoration of this kind, there is one bird the less. If the plumage of hawks and such birds only was used, it would not matter so much, but our useful insect-eating birds, including those social birds which prefer to build near our dwellings, are indiscriminately slaughtered, and everything that can fly, from a humming-bird upwards, finds a ready sale to meet the demands of this fashion. So we say that those women who wear the plumage of our useful birds for ornaments, are, unintentionally it is true, enemies to agriculture. Every bird thus sacrificed, means so many more insects, and more insects mean less grain and other field crops, less fruit in the orchard, and fewer vegetables in the garden. To such an extent has this slaughter reached in England, that the papers are discussing it, and amendments to the bird laws are proposed. In this country the evil is also a serious one, and the number of birds is being rapidly diminished. Women can put a stop to this indiscriminate "murder of the innocents" if they will, and they only need to have their attention called to it to do it. Let every one refuse to wear these feather ornaments. Aside from the economical view—and it has a direct bearing upon agriculture and horticulture—we are sure that no one of proper feelings would wish to adorn her person at the cost of the life of a happy creature which, when alive, was most likely useful, and at any rate added to the beauty of the world. You who read this, would you destroy the life of a bright and beautiful singing bird? If you wear the spoils it is proof that some one has done it for you! The case needs only to be stated for all sensible women to forego such ornaments and let the birds live.

A Foot Scraper for the Door-step.

The careful housewife has a sharp eye for muddy feet, and her attempts to enforce habits of cleanliness upon the boys, not to mention older folks who wear boots, often lead to forcible remonstrances. How can one keep his boots free from mud while he is working about a farm? The dust brought in upon the feet makes work for the women folk, who have plenty to do without this extra task, and men are apt to be forgetful about these little household matters. As a good reminder then, let every door-step be provided with a foot scraper and a boot cleaner. A very useful one may be made of a piece of plank a foot wide, and eighteen inches


FOOT SCRAPER.

long. In this, at one end, are bored two inch-and-a-half holes, about eight inches apart, and in these two short posts are fitted. A saw-cut is made down the center of each post, about four inches deep, lengthwise of the plank, and a piece of broad hoop-iron, or a piece of old saw blade, is placed in these cuts for a scraper. A screw through each post, above the scraper, holds it firmly. Then, at the other end of the plank, two pieces of board are fitted, to each of which a common coarse scrubbing brush is fixed by a piece of spring steel, which may be procured from the blacksmith for a few cents. These brushes are fitted as shown in the engraving, and so that when the boot is drawn between them, they sweep the mud off from the sides. Before the brushes are used, the boots should be drawn over the scraper to clean the soles. If this cleaner is kept near the door, he must be a very careless person who would not think of using it, or a very ungrateful boy who would refuse to do so. The cost of this useful scraper need not be more than fifty cents and an hour's work, and then what sweeping of floors and carpets it will save!

Extending a Bureau.

It sometimes happens that one bureau affords too scanty accommodation, and the room will not admit of two bureaus. We give here illustrations of the manner in which a lady, who found herself

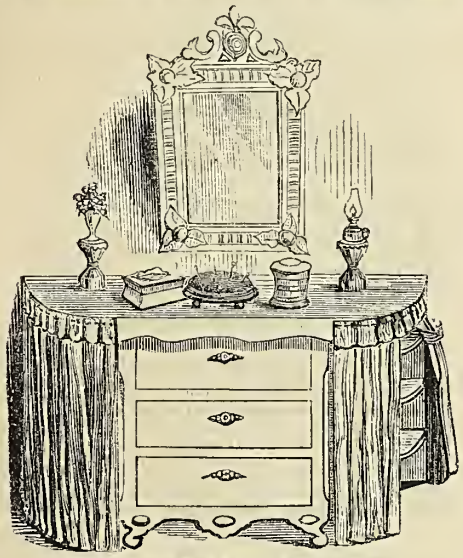


Fig. 1.—BUREAU WITH EXTENSIONS.

so situated, overcame the difficulty. Two triangular stands were made, the same hight as the bureau; the top and the two shelves being of triangular pieces, the sides as long as the width of the bureau, and one of them rounded, as shown in figure 1. These are made of pine, the two sides being of thinner stuff than the top and shelves, and all well nailed together. This job would not be beyond the ability of those ladies who have learned to use a saw and plane, and at any rate may be cheaply done by a carpenter. It would be better to have a bottom-piece, but these were made without. The stands are to be upholstered; an alpaca or other skirt may come in play here, and it will be all the better if lined. The curtain should be in two parts, opening in the middle, and the parts should lap sufficiently to keep out the dust; after the top coverings and curtains are put on, a ruffle with a narrow, box-plaited edgeing, will make a neat finish. The shelves are very convenient to hold under-clothing, stockings, and various other matters,

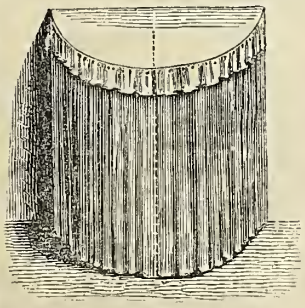


Fig. 2.—ENDS AS A TABLE.

leaving the drawers of the bureau for nicer articles, and the lower shelf is a convenient place for shoes, or a work-basket. Those who go into the country for the summer, find the chamber fittings, whether in private houses or hotels, of the most meagre character, and they can in this manner readily increase their store room. The hint should not be lost upon those who take boarders, as their visitors are from cities, who have been accustomed to the abundant closet room of modern houses. It does not take expensive furniture to make a chamber attractive, and this, and other cheap devices we have heretofore published, will go far towards ensuring the comfort of their guests. If the corner pieces are not wanted for a bureau, they may be put together as in figure 2, and thus form a neat toilet table, all the more useful than such tables ordinarily are, from its storage capacities.

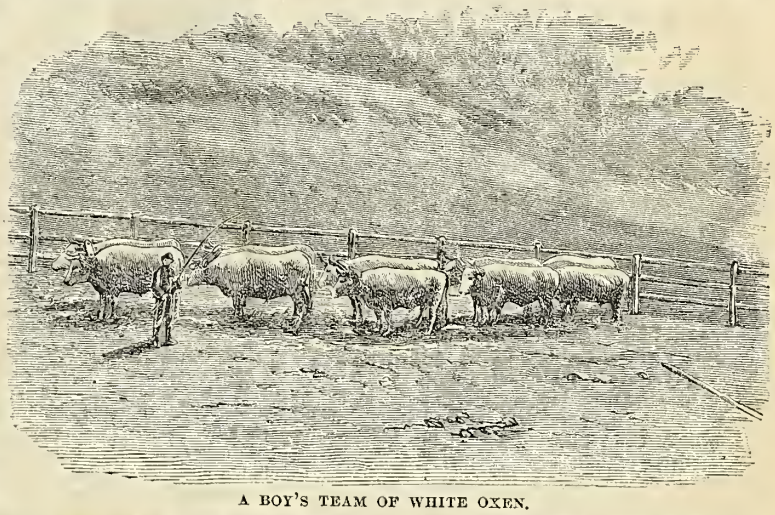
The "New Process" Flour.

Of late both millers and housekeepers have been surprised by the advent of a new term as applied to flour. Brands called the "new process" flour are now offered, and as they are sold at the highest price, it will interest the housekeeper to know in what its claimed superiority consists. In the ordinary grinding of wheat, the object of the miller has been to produce from his grain as much flour and as little "middlings" as possible, as the middlings were considered as a waste product or "offal." Hence the grinding has been done very "close," with sharply dressed burrs, brought near together, in order to shave the grain into powder, and cut up the horny inner coat of the grain as fine as possible, so that it might pass through the bolt with the finest starchy flour of the kernel. This, however, could not be done so thoroughly as to get the greatest yield with the best quality of flour, except by very few millers. Spring wheat, under this old treatment, made a very inferior flour, because the inner coat of the grain makes up a larger proportion of its bulk than it does in winter wheat. But a few years ago it was discovered that by grinding "high," that is, with stones more widely separated, and with a smooth dress upon them, the bran could be cleanly peeled off from the wheat, and the grain crushed or broken into angular fragments, from which the waste products, as the bran and the "fuzz," which is found upon one end of the grain, could be separated, and the fragments when afterwards re-ground, produced both more and better flour. This is the "new process," which has speedily become very popular, and the more so when it was discovered that spring wheat of a certain grade, could be made to produce a larger yield and a better quality of flour than winter wheat, thus making a higher priced flour from a cheaper grain. This is the manner in which the new process flour is now made. The "purifier," which cleanses the first product, is a machine into which the middlings are run, and exposed to a strong current of air, which carries off the light "fuzz" and small specks. The purified middlings are then re-ground and bolted, the larger particles, which do not pass through the cloth, escaping over the tail of the reel, and being returned to the purifier and stone, to be again ground. The flour is therefore free from impurities, contains more of the nutritious portions (the phosphates and nitrogen) of the grain, which are concentrated mostly in the inner coating of the grain, and there is a less quantity of middlings made. One consequence of the "new process," has been to increase the market value of spring wheat, until the best grades even bring a few cents per bushel more than fall wheat, thus both the farmer who raises the wheat, and those who consume it in the form of flour, are alike benefited.

BOYS & GIRLS' COLUMNS.

Twelve White Oxen.

A lady sends us a picture of a team of five yoke of oxen, which we have had engraved. In the picture a boy is seen standing with the team. There is nothing very remarkable about the five pairs of oxen in themselves, although they are all white, seem to be very good ones, and stand very quietly. But there is something in the story of these twelve oxen, for there are twelve altogether, although but ten are shown in the picture, which is worthy of the attention of every boy who drives oxen or horses, or tends cows or sheep. The boy who is seen standing by the leaders, is the owner of the twelve oxen, and he began breaking, or rather training, them when they were calves, and he was but ten years old. Now he is sixteen years old, and he and the oxen work together every day, and make their living by hauling charcoal. The oxen are all pure white, and being well matched, make a handsome team. Five pairs go with the wagon and one rests in the stable, so that in case of any accident to one ox the work need not stop. Each wagon load is 300



A BOY'S TEAM OF WHITE OXEN.

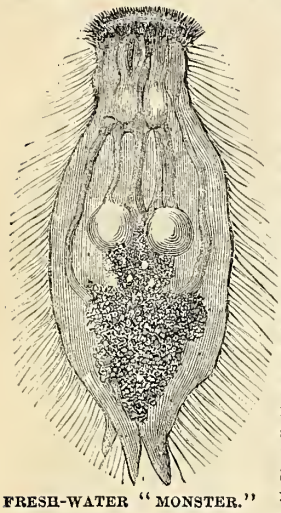
bushels, which is equal to about ten times as much as a common wagon box full, but as charcoal is not very heavy, this large load, which is carried in a very high spreading box, is easily drawn by this stout team. But neither is all this very wonderful, for there are many ox-teams as large as this engaged in hauling charcoal. What is really worth notice is, that this youth is able to manage his large team without a blow or a loud word, and with nothing but a light rod with which he signals to them. And this perfect control has been gained over these animals by constant kindness from their first training, when they were calves, up to the present time. There are persons who think that nothing can be done with oxen without loud shouting and blows over the nose and the horns, which are the most tender parts of their bodies, with hickory sticks. This sort of treatment spoils the animals, and makes them stupid and troublesome. At the New England Fair, last year, we saw some trained heifers and steers, which performed many surprising tricks at the mere motion of a wand in their owner's hand, and after they had done, would come and lay their head upon their owner's shoulder in the most gentle manner. One could see that they had been trained with the greatest tenderness, and had been gently handled. How much more pleasant and less troublesome it is to handle animals trained in this manner, than to have them full of fear and dread, and instead of approaching their keepers kindly, to try to keep as far away from them as possible.

A Fresh-Water "Monster."

BY MRS. MARY TREAT.

There are a great many curious and strange-looking animals all around us—yes, wonderful creatures live in the ponds and swamps, and even in the ditches by the roadside; but, while these animals are so strange in their forms and ways, they are also so small that we must use the microscope to see them well. It is a great pity that a really good microscope costs so much that very few persons can afford to have one, with which they can see these interesting things, and also learn that a great deal that has been written about the wonders of the micro-

scope is nonsense. There is nothing more wonderful than nature, but there have been many stories told about nature as seen with the microscope that are not true. If you have not a microscope, you must then use the eyes of those who have, and who will report what they see, exactly as they see it. Let us go to some pond or ditch where water-plants grow, for the animals we are after like these still waters better than the fast running brook. Having with us a preserve jar, or other wide-mouthed bottle, we take some of the water and plants which grow in it, and carry them home. If we have been fortunate, we shall find that when we put a tiny spray of a plant and a few drops of water under the microscope, we have a menagerie of far more wonderful animals than are to be seen in Barnum's great "Centennial Moral Show." With a common microscope we can see something of these animals, but to get proper look at them, and see all their parts distinctly, a very powerful one is needed.



FRESH-WATER "MONSTER."

One day, not long ago, I found a most singular-looking animal, and had him drawn, so that our boys and girls might get an idea of how he looked. Of course I cannot put any life or motion into it on paper, so it looks somewhat stiff and awkward, but if you could see it swimming about, and see the fringed wheel about its mouth in rapid motion, you would think it a very lively fellow. The creature has great jaws just below the mouth, with which to grind its food to pieces, and if you could see it eat, I am sure you would agree with me in thinking this a most wonderful animal. So transparent is the creature that we can see the food pass from the jaws into the stomach. The body seems to be covered all over with points, much like the quills upon a porcupine; I suppose these are its weapons of defense, for among these small animals—just as among the larger ones—the stronger devour the weaker; there is a continual warfare going on among them, and the ways in which some of them avoid or defend themselves from their enemies are curious enough. Some of these tiny creatures build houses in which they hide when danger approaches. There is one little animal, quite common, which we call the brick-maker; this builds a house out of little pellets of clay, laid up like bricks, and fastens it to some leaf or stem growing under water, and when any larger and hungry animal comes near, he drops down into his house, where no intruder can follow him, and he is safe. But the one here figured never builds a house nor tries to hide, and seems to have just two things in life to do: to keep out of the way of creatures larger than itself, which would capture and feed upon it, and the other to catch animals smaller than itself, and feed upon them. These minute animals, which can just be seen by the unaided eye, and several of which have abundant room in a drop of water, have their living to get, just as have the larger animals.

Aunt Sue's Chats.

A TOILET SET.—Cora writes from Woodstown, N. J.: "Aunt Sue, will you please send me through the *American Agriculturist*, patterns for a toilet-set, including pincushion, hair-pin-box, hair-receiver, mats, also a card-case?"—Well, Cora, dear, these things are so common in every house, that it seems hardly worth while to describe them in the *American Agriculturist*, still as there may be some others who would like a few hints on the same matters, I will describe some of those which have lately come under my notice, first

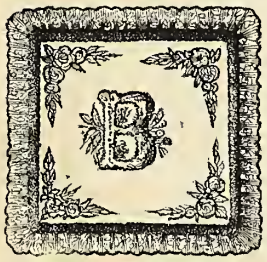


Fig. 1.—PINCUSHION.

A PINCUSHION.—Make a square one of unbleached muslin, the size you require; cover it with colored silk, or paper muslin. Then for the outside cover, take a square of Swiss muslin, transfer an initial letter from the corner of some of your old handkerchiefs, to the center of the muslin, and some pretty little corner pieces from old collars, or embroidered handkerchiefs. Trim it round with a ruffle of lace, and baste a quilled ribbon around it where the muslin and lace join, for a finish, as in figure 1. I say "baste" because you will have to take it off when the cover is washed. Fasten the cover on with four pins, one at each corner.

MATS.—For the mats, cover squares or circles of cardboard with silk, (or paper muslin), and make covers for them of Swiss muslin, with transferred embroidery, lace, and quilled ribbon, just like the pincushion cover. Baste the muslin by a few concealed stitches, to the covered cardboard, so that they may be easily removed when they have to be washed. Of course your quilled ribbon must match your silk or paper muslin.

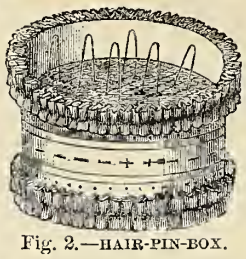


Fig. 2.—HAIR-PIN-BOX.

HAIR-PIN-BOX.—For this get a round collar box; half fill it with curled hair, and sew a piece of net over it, about an inch and a half from the top. The best way to do this, is to cut a strip of card-board a quarter of an inch wide, and sew the ends together so that they shall make a hoop that will just fit inside of the box; then cover this with netting, (it is best to have the netting double), like a sieve, and fasten it into the box, just above the curled hair. Then put perforated silver-paper, worked with any pattern you like, around the outside, and trim the edges with quilled ribbon, as in figure 2. Line the inside with plain silver-paper.

Fig. 3.
CATCH-ALL.

Fig. 4.
CATCH-ALL.

HAIR-RECEIVERS, or "Catch-alls," these are very various. You will find the description of a very neat one in the March number of the *American Agriculturist*, 1875, page 105. The cornucopia is the most common and simple kind. Take a piece of perforated silver-paper, about ten inches square, work it with silk or worsted, any pattern you choose. Double it, horn-shaped, and sew the edges together. Fasten quilled ribbon down the seam,

Fig. 5.—CATCH-ALL.

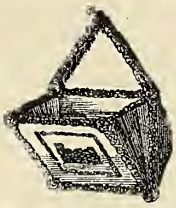


Fig. 6.—CARD CASE.

and around the top. Put a ribbon loop at the upper point, by which to hang it up, and a tassel at the lower point, as in figure 3. Line it with a square of marbled oil-cloth, a trifle less than ten inches each way. This is the nicest kind of a lining, as it may be washed.

Another very pretty catch-all, like figure 4, may be made of quilled ribbon, perforated silver-paper, and a piece of silk or ribbon. Cut the back piece about ten inches long, by four wide, the front piece about five inches by three; fasten a little silk bag at the bottom, with a tassel where it is drawn together; work your initial near the top, with either silk or worsted, and trim with quilled ribbon. Another pretty one, like figure 5, may be made by perforated silver-paper, lined with silk, and trimmed with quilled ribbon, just large enough to hold a tumbler or jelly-glass, and in the same way you may make covers for bottles of cologne or other scents, that you may wish to have standing on your bureau.

Fig. 7.
SHAVING-CASE.

CARD CASE.—I do not exactly know what you mean by "card-case," but if you refer to a sort of wall-pocket for cards, letters, etc., you can make a very useful one from a handkerchief-box, (such as half-a-dozen handkerchiefs are sold in). Cut off the edges of both top and bottom of the box, leaving two pieces, the top and bottom, just the same size. Join them together with a "pie-shaped" piece of silk, (or paper muslin), as in figure 6, and trim with pinked silk, (or paper muslin). Hang it up by a quilling of pinked silk, or muslin.

Very pretty pincushion-covers, mats, etc., may be made with "spattered" swiss muslin, lined with silk, and trimmed with quilled ribbon.

A SHAVING-CASE made of silver perforated paper, with an initial worked in the center, trimmed with quilled ribbon, and furnished with shaving-papers, cut the same shape as the outside, but a trifle smaller, is always an acceptable present to a gentleman who shaves, (always providing he hasn't already too many for convenience). See figure 7.

It is an improvement to the perforated silver-paper, to line with plain silver-paper, the silvery side next to the perforated paper, so that it may show through the holes.

Of course other materials can be used than those here mentioned, and very pretty affairs may often be made out of bits and scraps that are useless for other purposes.

Aunt Sue's Puzzle-Box.

BEHEADED RHYMES.

1. The little boy had a painted ——,
   By his nurse the little chap was ——,
   And she called the little fellow ——.
2. This little fish is called a ——,
   'Twas caught by a boy whose name was ——,
   And afterwards stolen by a ——.
3. From the garment was torn a little ——,
   It made the lady who wore it ——,
   She trembled with fear when she heard it ——
4. This horrid fish is called a ——,
   If Noah & Co., all, should "——,"
   They'd scarcely hear it in the ——.
5. He came to the table and took his ——,
   But the little rascal was so ——,
   That all alone his meal he ——.
6. The irate woman began to ——
   Her servant, for having the room so ——;
   The servant declared she was getting ——
7. She dressed herself exceeding ——
   And off she hurried to the ——,
   To buy, she said, some books on ——
8. The little maiden had to ——,
   When she upset her jug of ——
   Upon the paper, and spoilt a ——.

NUMERICAL ENIGMA.

I am composed of 10 letters:
My 6, 7, 3, 9, is a kind of fruit.
My 7, 3, 9, may be found in the field or on your head.
My 5, 2, 8, 4, 10, 9, belongs to a peculiar religious sect.
My 1, 3, 6, is a kind of juice.
My whole is the name of a famous poet. S. L. P.

CROSS WORD.

One and two are in rain-bow but not in sky,
Three and four are in hill-top but not in high,
Five and six are in stain but not in spot,
Seven and eight are in march but not in trot,
Nine and ten are in haul but not in draw,
Eleven, twelve, are in plane but not in saw,
Thirteen, fourteen, in branch but not in leaf,
Fifteen, sixteen, in rye but not in sheaf,
Seventeen, eighteen, in gnat but not in fly,
Nineteen in deceitful but not in sly;
My whole is the name of a well-known poet,
Should you once see it written you'd certainly know it.
10. S. C.

PI.

Fi veery anip dan race ew leef
Weer tewrint no het rowb,
Who anym a dahn dulow saupe ot leah,
Hatt lyou dunsow su won. LUCY & SUNIE.

ACROSTICAL ARITHMOREM.

1. 1100 and tea. 2. 1000 and a bush. 3. 500 and aat. 4. 1000 and oar. 5. 2001 and seen. 6. 1500 and oes. The initials form a city, the finals a river. NIP.

ANAGRAMS OF VERY ANCIENT CITIES.

1. Steal my Pocho. 2. I. C. Opera C. 3. People, sirs. 4. Room, ten. 5. U. S. Inn. 6. Hate crag. SPHINX.

DIAMOND PUZZLE.

1. Part of a shaft. 2. An article of clothing. 3. To drive back. 4. Insnared. 5. Is much to be desired. 6. Coins of little value. 7. A short dessertation. 8. A beast of burden. 9. Part of a thistle.

The center letters, perpendicular and horizontal, name what we all are seeking. E. P. B.

ANSWERS TO PUZZLES IN THE APRIL NUMBER.

ELLIPSES.—1. Lump, plum. 2. Gape, page. 3. Ore, roe. 4. Rome, more. 5. Priest, stripe. 6. Grown, wrong.

METAGRAM.—Cape, ape; cap, Pa.

PI.—Learning will accumulate wonderfully if you add a little every day. Do not wait for a long period of leisure. Pick up the book and gain one new idea, if no more. Save that one, and add another as soon as you can

CHARADES.—1. Agate. 2. Metatome.

SQUARE WORD.—M I C E
I D O L
C O O K
E L K S

NUMERICAL ENIGMAS.—1. Black Warrior. 2. Gilly-flower.

DOUBLE CROSS WORD.—Mother, sister.

SINGLE CROSS WORD.—Kitten.

ALPHABETICAL ARITHMETIC.

159)488067(2755
(*Key:* Blacksmith.)

ANAGRAMS.—1. Tragedian. 2. Sympathies. 3. Parliamentary. 4. Bagatelle. 5. Conservatories. 6. Arithmetician. 7. Retrospection. 8. Entertainments. 9. Clergyman. 10. Nonsensical.

DIAMOND PUZZLE.

C
H O W
C A N N A
C H A N C E L
S E P T E M B E R
C O N N E C T I C U T
G A L A T I A N S
V E N I S O N
C O C O A
S U M
T

The Doctor's Talks—About Various Things.

So many of you have written letters that should be answered, that my "talk" this time must be of many very different things. Some of you write letters that I can not answer at once, and I let them wait until room can be made for the long story it will take to answer them. I hope all of you, boys and girls both, will send me your questions, as then I can know what you would like to have "The Doctor's Talks" about.

BALLOONS AND FIRE-CRACKERS.

Master W. H., in Huntingdon Co., Pa., is getting ready for the Fourth of next month, and wishes us to tell him "how to make paper balloons that will fly up of themselves." This is a puzzler, and I give it up. So long as a piece of paper is heavier than the same bulk of air, it will go down instead of up. The only way that we can cause paper, or any other material, to go up, is to make a large bag with it, and fill this bag with hot air or gas, so that the whole bag or balloon is lighter than a body of air of the same size, when it will go up in the air, for the same reason that a cork will rise through water. I think that W. H. must have in mind, not exactly balloons, but little *parachutes*, made of tissue paper, about eight inches or a foot square, with a thread tied at each corner, and all four threads brought together below, and fastened to a slight weight. When there is a strong wind blowing, and it strikes a house, the wind being stopped by the house, rushes upwards to avoid it, and there is an upward current caused in this manner. Now if one of these parachutes be held by the weight until the paper is bulged out by the wind, and is let go near the side of a building, it will be carried up by the current, and often be taken far beyond the top of the house, and when it gets out of the upward current, it will be carried along by the wind for a long distance, but it is all the while falling, though very slowly, as the paper being spread out, is kept level by the strings and weight, and can not turn edgewise, and its fall is very gradual. This is the only way that I know of to make a balloon go up by itself.

AS TO FIRE CRACKERS,

you would have to work a long while before you could learn to make a fire-cracker equal to those made by the Chinese, and sold so cheaply, even were it desirable to try. I am sure that all parents will agree with me in advising boys not to undertake to make fire-works, as it is altogether too dangerous. But why fire-crackers at all? Why not begin

ON THE CENTENNIAL FOURTH OF JULY,

and stop celebrating with noise and smoke? What have fire-crackers, made originally for heathen religious ceremonies, to do with the fact that our ancestors set up a government for themselves? I wonder what boys think about the 4th of July, and why they feel that they must make themselves very disagreeable on this particular day? I recollect that when I was a youngster, older boys went out at midnight, and I went with them; we took tin horns, drums, and all noisy things, and paraded about, disturbing the sleep of the neighborhood. I have not now the least idea what I did it for; other boys did so, and of course I wished to be as much of a boy as the rest. I do remember, however, that this nonsense of the night before made me so sleepy, that I had very little enjoyment of the day itself. Now, as there is no meaning in all this beating of drums, firing of crackers, and burning of powder generally, what is the use of keeping it up? Boys have had a hundred years of this, and I think that the boys of the new century should improve on the old ways.—But what shall we do? will be the question. You might do worse than to give this day to finding out what

THE FOURTH OF JULY

is all about, for I doubt if many of those who make a great noise and get very tired, have any clear idea of what it all means. In many of the older States you live near some historical spot; there are old battlefields and camping grounds, and "headquarters," all over the older States, and it would be a very sensible thing to get up an excursion and picnic, boys and girls together, to one of these places, and in advance let some of you look up its history, so that you will know what happened there about 100 years ago. But if there are no such places at hand, and in the newer States of course there are none, you can have your picnic just as well. There can be reading and singing, and all sorts of out-door games. I wonder how many read, or ever heard read, the very paper which was signed 100 years ago this Fourth of July, the signing of which is celebrated every year, and more especially on this particular year—I mean of course the Declaration of Independence! This year then, of all others, every American boy and girl, who is old enough, ought to read this and understand what it meant when it was written. Then there is Patrick Henry's great speech, Washington's Farewell Address, Webster's Bunker Hill Orations, and many others, full of grand teachings which young people are in danger of overlooking. A picnic with reading—and even speeches—songs and games, will be much more sensible than noise and smoke, and you will afterwards think of it with much more pleasure.

CATCHING SQUIRRELS.

Here is Master Cyrus, who does not write a very long letter, but it is better than the letters of many older persons, for it states at once what he wants and *then stops*. He writes: "Dear sir, will you be kind enough to tell us how to catch squirrels on a fence. Yours, truly, CYRUS." Now that is what I call a capital letter, and if he had written two or three pages of note paper, beginning by a long apology for writing, and somewhere near the end, told what he wanted, it would not have been half so good. The squirrels that we usually see running along fences, are the little striped fellows, called chipping or ground squirrels, and chip-munks. They live in holes in the ground, usually made near the roots of a tree, and they are seen most often towards fall, when they are very busy in laying up a supply of food for the winter; at this time they have the pockets or pouches in their cheeks filled with small nuts or grain, which they are in great hurry to store away in their burrows. They can be caught in traps, but why catch them, Cyrus? They do very little harm; the grain they gather is mainly that which is scattered, and they do no mischief to the farmer worth talking about. Besides if you caught them they would be very poor pets, as they do not become tame like the gray or flying squirrels, but always are wild and discontented. I think you had better let them run "on a fence," and be amused by watching their quick and pretty ways, and not try to catch them, as they would be very unhappy in confinement.

THE AQUARIUM.

I thought I had made a very full talk about aquarium matters last April, but it seems that there are some things yet that need to be explained, and I will answer several questions in a lump. No; the water does *not* need to be changed. When all goes on well, the water will keep clean and sweet for months; but there must not be too much animal life for the amount of plant life. . ..There is no way of preventing the green scum from coming upon the sides of the glass; it does no harm, but is useful; but as it covers the glass so that you cannot see plainly what is going on inside, you do not want it there. I say it is useful, for it is a living and growing plant, and if I could show you a little of this scum under my microscope, you would see that it was a great lot of green threads; very simple plants, but they in growing behave towards the water just as I told you last April larger plants do; they take from it the carbonic acid, and give off oxygen to the water. Snails help to keep this green scum from growing, they will crawl along the glass and eat it off very clean, but if there is too much for them, you can rub it off by using a cloth or bit of sponge tied to a stick; this may make the water look thick, but it will soon settle and become clear....The tritons, or water-newts, or salamanders, as the lizard-like water animals are called, are amusing to have in the aquarium, and they come to the surface to breathe, and do not get their air from the water....Tadpoles are interesting, as they develop very slowly, and you can watch their changes, and they also, except when very young, breathe air....Yes, the water-butter-cups are very excellent plants for the aquarium, and wherever there is a pond, or a slow stream, you can be pretty sure to find water plants of some kind that will do.

WILLIE'S DOG.

My "little friend Willie" living in Huron Co., Mich., no doubt thinks that, as I am called "Doctor," I must do doctoring, so he tells me that the hair comes off of his dog and the skin turns red. He wishes to know what is the matter and what he shall do. I do not know much about sick dogs. I never treated but one, and was very successful. I thought he should have a good dose of strychnine, he took it, and was never afterwards troubled with any disease. Willie's dog appears to have the *mange*, and a friend who knows all about dogs says: mix up flowers of sulphur with oil (sweet or lard oil), to make it thick like batter, and rub the dog all over with this for two nights, or if very bad, three, and then give him a washing with soap and water.

GRACE DARLING.

Lizzie has a picture of a girl rowing in a rough sea, whose name is Grace Darling, and she wishes to know all about her. Grace was the daughter of the keeper of the Longstone lighthouse, on one of the Farne islands, a little cluster of rocky islands off the north-east corner of England. On Sept. 6, 1836, the steamer Forfarshire, going between Hull and Dundee, was wrecked on one of these islands, and of 53 persons on board, all but 15 were lost. The wreck took place in the night, and the next morning Grace saw these 15 persons clinging to the rocks, where they would be washed off the next high tide. Grace launched a boat, and with her old father, she rowed out to the wrecked persons, though the waves were very high, and brought nine of them safely to shore; while the others were saved in some other manner. It was a brave act, that of this young woman, to risk her own life to save the lives of others; the story was told all over the world, and from being merely the daughter of an obscure lighthouse keeper, she was for a time more talked about and more celebrated than any other woman. People gave her presents, and $3,500 in money was raised for her by subscription. She died in 1842, at the age of 27 years.

TO CORRESPONDENTS.

Freezing.—Thomas P., North Hampton, N. H. I cannot answer your question about the freezing of water until I have *tried it myself*. Since your question came we have not had cold enough weather to try it.

What are they?—Bessie W., Mt. Sterling, Ill., only 9 years old, sends the Doctor some things she found on the bushes, and would like to know what they are. These are one kind of flowers of the Hazel, but not yet open. If Bessie can see last year's papers, and look at March, 1875, page 106, she will find pictures of them, and the whole story about them is told.

Iron and Steel.—Here comes the father of some of our youngsters, who thinks that it would interest old persons, as well as young, to have me tell them what is the difference between iron and steel, and how one is made into the other. Good. I am glad to have the young people ask questions, and it is pleasing to know that their parents take an interest in what is given their children. Let me know your wants, and I will try to meet them in due time.

The Prize Dog Stories.

Last month we gave the names of those boys and girls to whom prizes had been awarded for their stories. There is just one unpleasant thing about awarding prizes—no matter how many prizes there are, there are never enough to give to all who deserve them. Those who read the pieces, say that some were *almost* as good as those which took the prizes, and they say that the following are deserving of special mention:

M. Alice Walsh, Jerusalem Mills, Md.
Nellie B. West, Washington Heights, N. Y. City.
Mattie E. Dimon, Putnam, Conn.
Libbie S. Stafford, Port Hope, Mich.
Frances H. Long, Port Royal, Pa.
Ida C. Hosack, Parkwood, Pa.
Sarah Fleming, Spartanburg, S. C.
St. Lawrence Fleming, Spartanburg, S. C.

Among the boys are

Fred. A. Stewart, Dracut, Mass.
David Angst, Waumandee, Wis.

I said that perhaps some of the stories would be published, so I give you the interesting parts of those of the oldest girl and boy, leaving out of each all that is not necessary to tell the story.

THE OLDER GIRL'S STORY.

By Miss Fussie Eastwood, Port Elgin, Ont.

My story is about our own dear "Carlo." The poor old fellow is now blind and very lame, but we can not think of killing him, as some do when dogs become helpless, because he has been such a noble dog. Long ago, when I was but four years old, I went on a visit to grandpa's with my mamma, and Carlo went with us too; one day I was playing with my two little cousins, away off in one of the fields, in which was a very deep spring of beautiful cold water; we became very thirsty, and bending over to take a drink, I fell into the spring; my cousin Johnie, who was much bigger than I, caught me by my hair, and when I screamed with the pain, Carlo came bounding up and held me by my pinafore until help came.

Then again, when I was ten years old, Carlo and I were at grandpa's again, just at harvest time. The hired man who drove the team was so cross that we did not like to ask him to let us get up on the hay, but when the last load was about to start, I was determined to have a ride, so climbing up under the wagon, I clung to that pole between the wheels, but oh! how I wish I hadn't! This last load proved to be a very little one, and when they stuck the pitch forks into the hay, one of the prongs went right into my wrist. I dared not scream, because the man might tell of me, but Carlo, dear old dog, seeing that I was in a fix, barked and barked until the driver, knowing that Carlo never barked without a good cause, jumped down to see what was the matter, and there he found me. When he saw how badly I was hurt, he was not so cross after all.

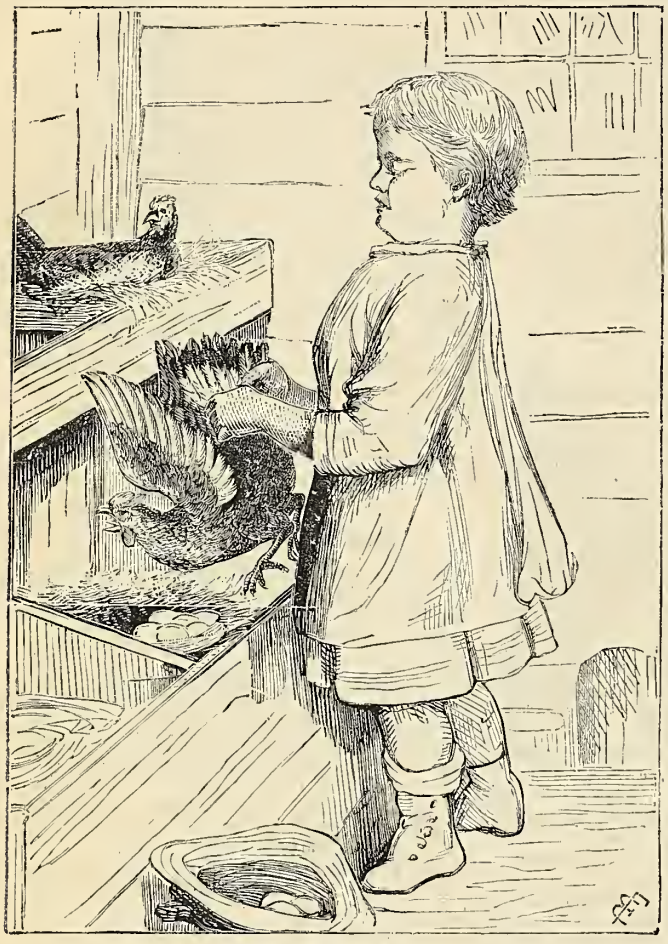
Our Carlo goes to church every Sunday morning, with an old man, a friend of ours, and when any other dogs go to church, they always put them out, but they never put Carlo out, because he is such a quiet dog.

THE OLDER BOY'S STORY.

By Frank Zimmermann, Peshtigo, Wis.

His story reads: I wish that all the boys and girls who read the *American Agriculturist*, could have known my

faithful Chollor. He came to us a poor, forlorn, hungry pup, and my parents at first would not let him come in the house, but as he lingered around and would not be driven off, they made up their mind to let him stay. The dog and I were both glad, for we were great friends already. My father keeps cows in a distant pasture in the summer, and he goes out with horse and wagon twice a day to milk them. I and my dog Chollor used to go also, and in only a few weeks he knew every head of cattle that belonged to us, as well as a man could have known them, and he would get them together for us when told to do so. If it happened that any strange cattle came among ours, he would come and whine, and look up into my father's face as if he would say "these don't belong here, let me drive them out." On that fearful Sunday night, the 8th day of October, 1871, when the great fire broke out, and destroyed all we owned in this world, we all had to go into the river to save our lives; my parents and my three sisters, and my dog and me. The rush was so great that I got separated from my parents, and I had to go further up the river. I went out on the logs which were in the river, and while crossing from one log to another, I fell into the river, and was quite unable to swim. My dog saw the danger I was in, and he came and pulled me ashore. When the heat was so great that we almost perished, he would go out and splash water over me. We both got saved, but when we had to go amongst strangers for shelter and food, a man shot the dog because he growled at him. That was poor pay for all Chollor's kindness.



CARL AND SPECKLE.

Carl in the Country.

Carl Anderson was a little city boy, but his grandfather lived on a farm, and in the summer time nothing pleased Carl so much as when mamma let him go and stay with grandpa in the country. The yard in front of the farm-house was large, and shaded with great maple trees, and under one of the trees were the bee-hives, with the bees always going and coming to and from the clover-field close by. Carl had often tasted grandma's beautiful honey, so he knew why the bees went and came about the clover-blossoms, and loved to watch them, though he was careful not to go too near.

Back of the house were the barns and stables, with the milking-yard and the chicken-house, and still farther back, a large field which grandpa called "the six-acre lot," where there was a pond for the ducks. Carl often sat near the edge of the pond, and watched the hundreds of tadpoles frisking about, looking like little frying-pans—he thought, with only their very big heads, and their very small tails. Often and often he tried to catch them, but they were too slippery for him, until one day he scooped up with his hand a little fellow who wasn't looking, but the tadpole was so cold, and wriggled so, that Carl was glad to put him back in the water, and let him scull himself off with his tail. But of all the pleasant things at grandpa's, Carl thought, Aunt Ellen was the best. She knew where the prettiest wild flowers grew in the woods, and could tell Carl where in the brook to find the nice round pink and white pebbles for jackstones; she knew the place of every nut-tree on the farm, and grandpa said she made the best bread in the country. Then Aunt Ellen was so kind to Carl, so ready to tell him stories, so sure to comfort him when he fell down and scraped his knees, that Carl declared he loved her "most as well as mamma." Aunt Ellen had charge of the poultry, and every afternoon she went out to gather the eggs, and Carl was sure to be on hand to help her hunt, and sometimes, when he was very careful, to hold the egg-basket. The hens had a nice row of boxes filled with hay, in which to lay their eggs, but, strange as it may seem, these foolish hens often preferred to leave their nice boxes and take themselves and their eggs to some out-of-the-way place where no one would think of a hen's going. But there were two hens that never seemed to care about running away from home. Every morning they went, soberly and properly, to the boxes in the chicken-house, and settled themselves to their work, which seemed to take all day to finish. The truth is—these old hens wanted to *sit*. Every afternoon, for nearly a week, Carl went to the chicken-house, hoping to find the hens gone, and to get a nice lot of eggs, but in vain, there they always sat, Biddy above, and Speckle below, looking very solemn, and refusing to be "shooed" away. At last, one day, while Aunt Ellen was hunting in the hay-mow for "stolen nests," Carl went into the chicken-house, determined to have those old hens off. He went straight to Speckle, seized her with both hands by the tail, and pulled her off the nest. Speckle was not used to such treatment, she struggled and flapped her wings, and squawked as loud as she could, until Carl was fairly frightened. He dared not let her go, for fear she would fly up and peck him, and it was very hard to hold her while she struggled so; so Carl called loudly for Aunt Ellen, who was already coming to learn the cause of the disturbance.

"Let her go!" she cried, as soon as she saw him, and Carl at last got courage to do so. Speckle did not wait to peek any one, but ran out of the door, cackling as loud as she could, and determined to tell all the other fowls how badly she had been treated.

"What was the matter with her, Aunt Ellen," said Carl, "did she have a fit?"

"Only a fit of terror," said his aunt, "she was afraid of you, and hurt by being held by the tail!"

"Well, I didn't mean to hurt her, I should have thought she'd have known that! But chickens don't know a thing; the hens just lay eggs and cackle, and have chickens, and the roosters do nothing but scratch around and crow and fight. I'm glad I'm not a chicken," said Carl, scornfully.

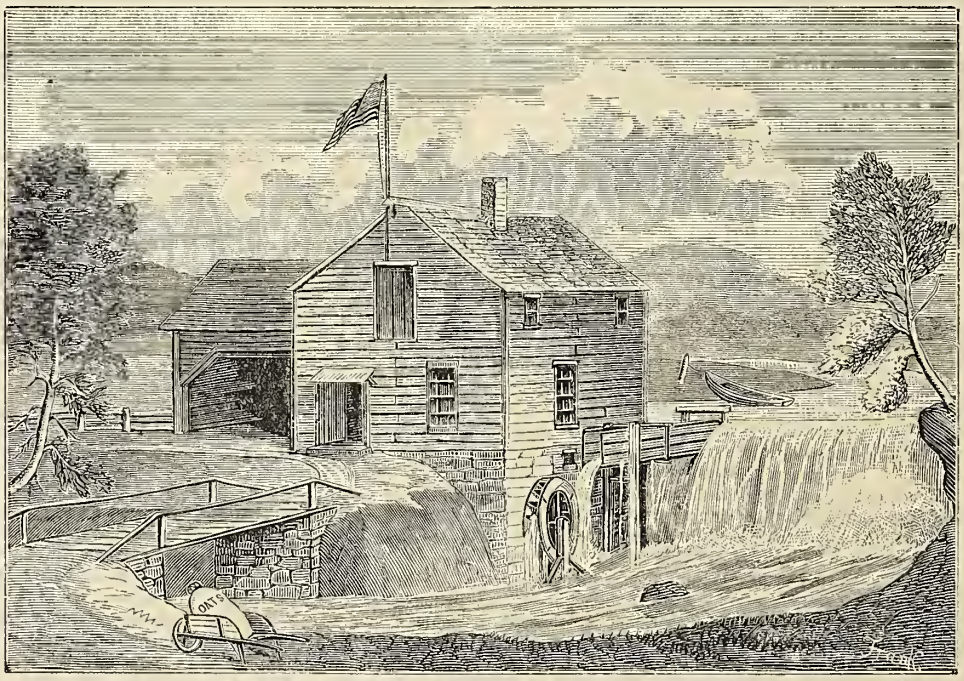
"They know more than you think," said Aunt Ellen, sitting down on a big box, "let me tell you about an old rooster we used to have. One of our hens, which had a brood of chickens, died, and the poor little things were left orphans. We tried to make one of the other hens take care of them without success. But what the hen would not do, our old rooster did. He took the little chickens for his own, stopped crowing, and took to clucking the little things about, scratched for them, watched over them, and when night came, sheltered them under his wings. They loved him dearly, and would run at his call, and he never left them until they were old enough to care for themselves. So you see roosters do know something beside crowing and scratching and fighting.

"He was real good," said Carl, following his aunt into the house, "I wish I'd seen him with the little chickens under his wing!"

Grandpa laughed a great deal when he heard of Carl's adventure, and saw the tail-feather which poor Speckle had left in his hands.

"Keep that feather where you can see it, my son," said he. "It will remind you not to take hold of anything unless you are very sure you can manage it."

No. 452.—Decapitation Puzzle, sent by Frank, and very unlike the pictures you had last month, as in those you only had to see what the artist had put in the picture, and then tried to draw your attention from it by making other things more distinct. In this picture master Frank says that the things he has in mind are only to be found by "beheading or curtailing" the objects which are there seen. You will recollect that in March we had a "Prefix Puzzle," in which the objects in the picture were to be made out by adding one of the letters of the alphabet to the name of each article. In this you must "behead," or take off the first letter; or "curtail," by taking away the last letter of the name of something in the picture. As many new boys and girls look at these puzzles, we are obliged every now and then to describe them. Now suppose there were a train of cars in the picture, and you were told that you must find "something useful in dry weather." By "beheading" *train*, you would get *rain*. Now on this plan you must try to find in the picture here given, the following: 1. The whole. 2. Part of a boot. 3. Conclusion. 4. Evil. 5. Noisy. 6. A grain. 7. To linger. 8. The top. 9. A serpent. 10. A nickname. 11. To split. 12. A pointed weapon. Send answers to Aunt Sue.



No. 452.—A DECAPITATION PUZZLE PICTURE. BY FRANK.

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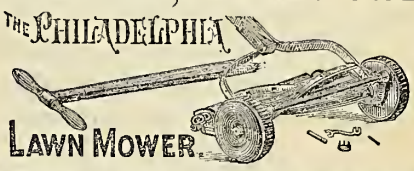

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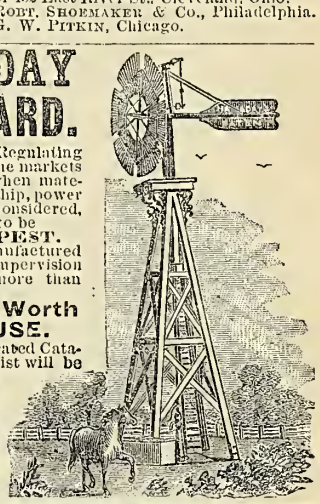

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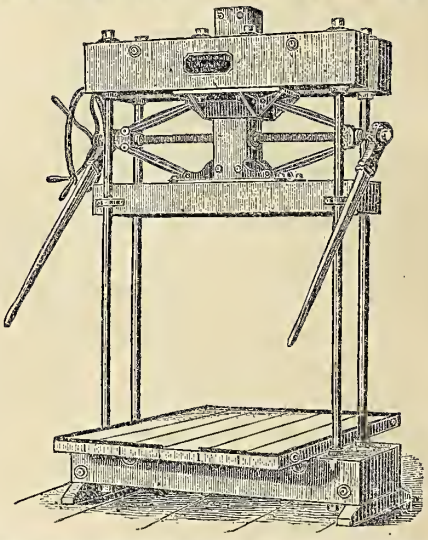

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Crushes all hard and brittle substances to **any required size.** Also, any kind of STONE for ROADS and for CONCRETE, &c.
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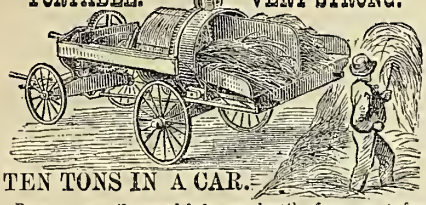

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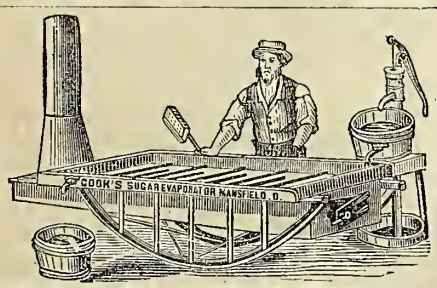

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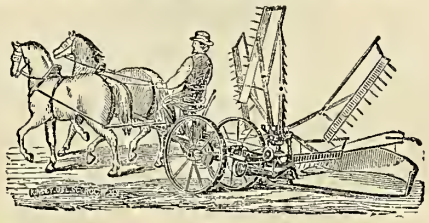

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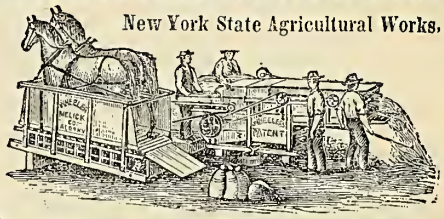

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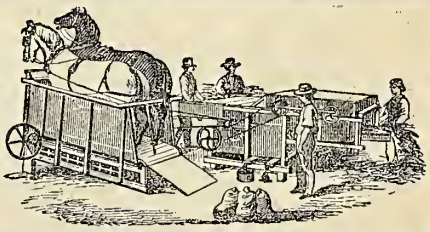
1854.  **1876.**

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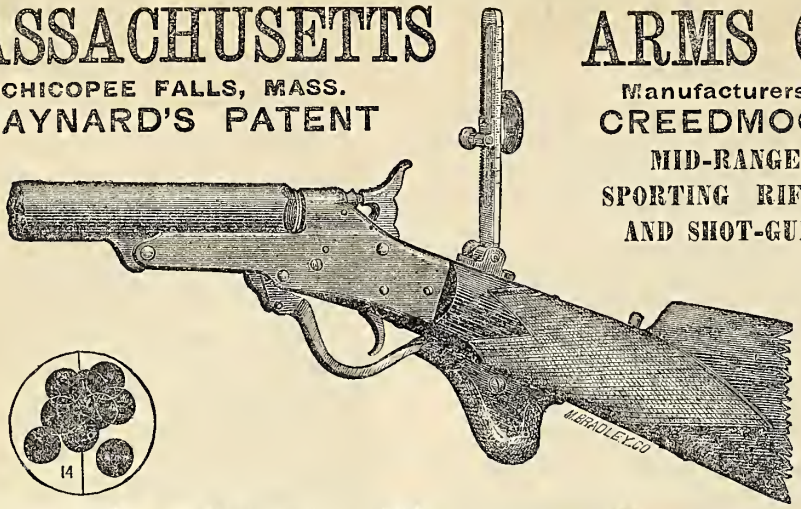

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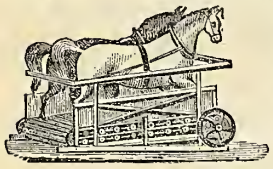

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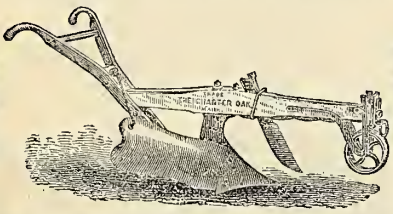

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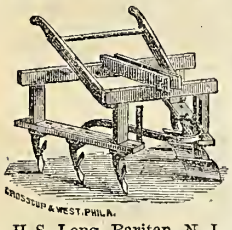

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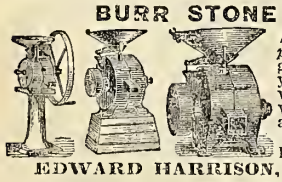

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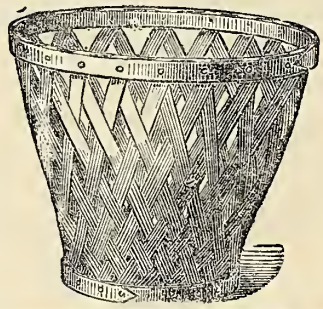

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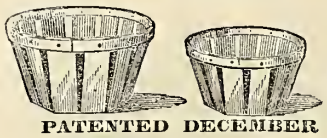

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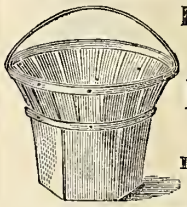

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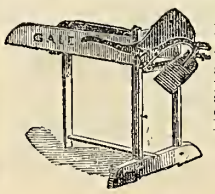

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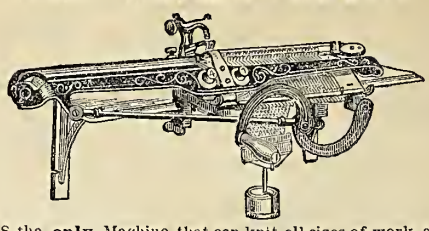

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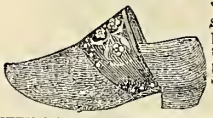

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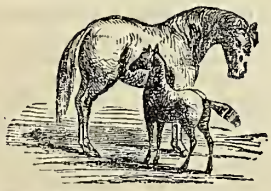

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 207.

Advice to a "Would be Farmer."—A young man whose father will buy him a farm, and establish him upon it, writes to us for advice. Our first advice is this: When you write a long letter to an editor, asking him about matters which are of no possible interest to any one in the world except yourself, sign your name to it, like a man, for really there is nothing in yours of the 24th of April to be ashamed of. Then don't think your personal affairs are of so much consequence that the editor will print his answer to your questions. Before you go on a farm, it will be well to learn that people in this busy world pay no attention to anonymous letters.

An Illinois Farmer wrote in April: Taxes are high, times hard, and money scarce. The roads all about here have been, since last fall, practically impassable for loads, and still it holds, rain, *rain*, RAIN! The country is full of corn, but we can't get it to market, and my chances of visiting the Centennial, as I had hoped to do, are now very slim indeed.

Palms for Palm Sunday.—To supply the churches in Rome for this important ceremonial, palms are especially cultivated at Bordighera, Italy, where the date palm has been grown for this purpose for many years. It is now the fashion to have the palm leaves blanched and gilded, and a recent *Gardener's Chronicle*, gives a picture of a plantation, showing the manner in which the leaves are tied up to blanch them. The people at Bordighera have a monopoly of this branch of eclesiastical horticulture.

A Potato Show in England.—An "International Potato Exhibition" will be held at Alexandra Palace, near London, on Sept. 28th and 29th, next, at which very liberal prizes are offered, most of which are open to all the world. There are 17 classes, in which American varieties have a fair share. We notice that B. K. Bliss, Esq., is one of the Executive Committee. The Secretary is John McKenzie, Winchester Buildings, London, E. C., from whom schedules may be had.

Potato Reports.—In January last, we published an engraving from a photograph which Mr. J. H. Burnett, of Onondaga Co., N. Y., had taken of his crop of Snowflake, as it lay on the ground after digging, and incidentally mentioned the yield from 1 lb., which was 60 lbs. 9 oz. The amount was not at all remarkable, and the engraving was not intended to show a large return, but simply the remarkably uniform crop of large potatoes. Many, supposing that it was published as a large amount to be grown from 1 lb. of seed, have sent us an account of their own trials, and these in all cases exceed in weight Mr. Burnett's crop. These reports continue to come, but as the results are small, compared with those which took premiums, both in this country and in England, we can not give space to publish them. Still we thank the senders all the same.

Feeding Hogs for Profit.—"J. W. R.," Smythe Co., Va. In feeding a hundred hogs we believe that it would pay to soak or boil the corn, instead of feeding it dry and whole. As grinding generally costs one-tenth of the corn, and cooking costs much less, it would be preferable to have a cheap boiler, and thus prepare the feed, than to grind it. The cooked feed would be as digestible as the ground meal. We also believe that in fattening the hogs it would be economical to cook some potatoes with the corn, if they can be purchased at 12½ to 15 cents a bushel. If the corn can not be cooked, we would grind it rather than feed it whole. As to the prospects for pork, we can only say that they *seem* to be favorable for good prices next fall.

Alderney and Jersey Cattle.—"G. W. T.," Dearborn Co., Ind. There are very few, if any, real Alderney cattle in the United States. Some breeders of Jersey cattle strangely enough persist in calling their stock Alderney, and thus help to perpetuate a mistake. The differences between the two are that they come from different islands of the group of the Channel islands, or the Alderney islands, as they are sometimes called in England, which consist of Jersey, Guernsey, Alderney, and some lesser ones. The Jerseys are considered the better cattle, and have been bred more carefully, although there is not much difference in the appearance of the two.

Agriculture and Horticulture at the Centennial.

The great exhibition opened on May 10th, with appropriate ceremonies, ending in the setting in motion of eight miles of machinery, by the joint action of the chief officers of a Republic and of an Empire. A brief visit to the grounds, has only given us an idea of the immensity of the exhibition, and we are sure that no one will be disappointed, however high may be their anticipations in the extent and completeness of the buildings and their contents. It was manifest at an early date that the principal buildings would not be enough for all the exhibits, and numerous others have been erected; thus the leather trade has one, another is for carriages, another for women's work, and so on. Besides these, many individuals and companies have separate buildings. Among the pleasant features are the buildings of the different States and Countries; nearly every exhibiting State has put up a handsome building, as headquarters for her own commissioners, and more than this, the wants of the people of these States have been thought of, and each of these buildings contains rooms, furnished with all conveniences for both men and women, where the tired can rest, parcels can be left, and the visitors from each State can find a temporary home. These various buildings together make a town the like of which was never before seen; from the log cabin of Canada, and the curious building of the Japanese, put up without nail or screw, through the singular structures of some of the States, up to the substantial and home-like English buildings, there is an astonishing and interesting variety. The readers of the *American Agriculturist*, those who stay at home, as well as those who go to the exhibition, while they will be interested in all departments, will be especially concerned as to those which include the products of the farm and garden. The Horticultural Building and the adjoining grounds, were illustrated in Dec., 1874, soon after the plans were drawn, and what was then only proposed, is now a reality. Last month we gave on the first page a fine engraving of the Agricultural Building, in which the farm products of the different countries will be displayed. Large as the building is, covering ten acres, it has been found all too small, and additional structures are providing for the dairy products, for bees, for fruits, for wagons, and other departments, and the display in all that relates to agriculture and horticulture, and the different manufactures and interests connected with these, is now or soon will be most complete. As many of the articles in these departments are only in season at certain times, stated periods have been fixed upon for exhibiting these, and perishable fruits and vegetables will be received each Wednesday all through the season. No money premiums will be given by the commission, their awards being medals and diplomas; but several individuals and societies have offered special prizes, to be awarded by the Board of Jurors. B. K. Bliss & Sons offer $200 for potatoes; D. Landreth & Son $100 for vegetables; Peter Henderson & Co., $100 for tomatoes. $1,000 is offered for Jersey cattle, by the Jersey Club; the Produce Exchange of Philadelphia $150 for cheese; the Pa. Ag'l. Society $1,000 in special prizes; the Memphis Cotton Exchange $1,000 for the best bale of cotton, and there are money prizes for fowls and dogs, and State prizes for cattle and other objects. As many may wish to so time their visits as to see some special exhibition, we give the dates at which the principal special displays will be made.

AGRICULTURAL PRODUCTS.

Pomological Products and Vegetables	May 16 to 24.
Strawberries	June 7 to 15.
Early Grass Butter and Cheese	June 13 to 17.
Early Summer Vegetables	June 20 to 24.
Honey	June 20 to 24.
Raspberries and Blackberries	July 3 to 8.
Southern Pomological Products	July 18 to 22.
Melons	August 22 to 26.
Peaches	Sept. 4 to 9.
Northern Pomological Products	Sept. 11 to 16.
Autumn Vegetables	Sept. 19 to 23.
Cereals	Sept. 25 to 30.
Potatoes and Feeding Roots	Oct. 2 to 7.
Autumn Butter and Cheese	Oct. 17 to 21.
Nuts	Oct. 23 to Nov. 1.
Autumn Honey and Wax	Oct. 23 to Nov. 1.

FIELD TRIALS.

Mowing Machines, Tedders, and Hay Rakes	June 15 to 30.
Reaping Machines	July 5 to 15.

LIVE STOCK.

Horses	Sept. 1 to 14.
Dogs	Sept. 1 to 8.
Neat Cattle	Sept. 21 to Oct. 4.
Sheep	Oct. 10 to 18.
Swine	Oct. 10 to 18.
Poultry	Oct. 27 to Nov. 6.

Applications for entry for any of the special displays should be made at once; proper forms must be used, which will be supplied upon application to the Chief of the Bureau of Agriculture, Burnett Landreth, Esq., whose office is on the grounds.

Entries of poultry require $1 for each bird, to pay for coops and food, and should be made before July 1st.

The display of live stock promises to be very fine; the entries closed May 1st, and include 150 horses and the same number of cattle from Canada, a large number from England, and there will be animals from Germany, France, and Spain, and of course the finest of our own herds. Twenty-two acres are devoted to the live stock, there being 770 stalls for horses, 1540 for cattle, and a corresponding number for sheep, swine, etc.

A special building, 180x200 feet, an annex to the agricultural building, and connected with it by a covered way, has been put up for the fruits and vegetables; this provides room for 8,000 dishes of fruit. Those who send fruits and vegetables to the exhibition, must forward them free of charge; the Commission will provide all needed tables, dishes, etc.

An interesting display, closely connected with agriculture, will be that of fresh and salt-water fish—and the process of artificial hatching, and all the apparatus used in fish-culture. From what we have seen and know of the exhibition as relates to Agriculture and Horticulture, we are sure that those who can afford the means to visit it, will get an ample return for the investment. Besides the objects we have merely hinted at as most interesting to our readers, there are the great displays of manufactures and products in the main building; the art treasures in Memorial Hall, and such an exhibition of moving machinery, as the world never before saw in the great building devoted to that purpose. Although it will be impracticable for the *American Agriculturist* to make a full report of this immense display, it will be adequately represented there, and no doubt much information will be gathered that will be of benefit to its readers.

The New York Horticultural Association.

The regular monthly meeting of the Society was held at their new rooms, 141 Eighth St., New York, on Wednesday, May 3d. Considering that this is the busiest season for all horticulturists, the meeting was well attended, and the display of plants and flowers, though not so large as at the previous meeting, made up in novelty and interest what it wanted in quantity. John Cadness, of Flushing, L. I., exhibited two specimens of a new variety of the old and well known Garden Hydrangea, (*H. Hortensia*). This was sent to Mr. Cadness in March, 1875, from Japan, by Mr. Thomas Hogg, where he found a single plant in some old garden near Yokahoma, and in all his botanical researches in Japan, extending over several years, this solitary plant was all he had ever found. This variety is probably a "sport" from the old Hydrangea, and was probably the only plant in existence, until increased by Mr. Cadness. We think it safe to say that no ornamental plant ever introduced into this country, exceeds this in value. It will probably be equally hardy as the common form, and therefore as a plant for lawns, cemeteries, etc., in sections where the thermometer does not fall to zero, it will be indispensable. On a small plant, of little more than a foot high, the clusters measured 9 inches in diameter, the "florets" 2¼ inches across, of the purest white, and so firm in texture, that some of our leading bouquet makers present, judged that it would be most useful in making up cut flowers. Mr. Cadness informs us that it will be ready for sale in August next. We are glad to know that the plant will be distributed here by Mr. Cadness, and not sold in a lump to some European florist.

The next most interesting exhibit was a collection of cut specimens of Cape Heath, grown by Edwin Simes, gardener to Mrs. Mitchell, Tarrytown, N. Y., they numbered 27 species and varieties, many of them of great beauty, and their healthy condition showed that they had been grown with great care.

From Robert Parsons & Co., Flushing L. I., were 13 specimens of Chinese Azalea, all distinct, and mostly new varieties; the double variegated "Souvenir de Prince Albert," was greatly admired. A collection of Orchids from Isaac Buchanan, Astoria, L. I., embraced *Saccolabium guttatum*, *Vanda tricolor*, *Cattleya Skinneri* and *speciosa*, *Miltonia flavescens*, *Schomburgkia tibicinis*, etc., etc. Also the very interesting white-flowered *Cereus Hookeriana*, the flowers resembling some of the night blooming sorts. From William Bennett, Flatbush, L. I., some fine cut blooms of Ixora, Orchids, and a wreath of the beautiful white-flowering greenhouse climber, *Stephanotis floribunda*, four feet in length, and covered with its wax-like flowers. From George Thurber and Geo. C. Woolson, near Passaic, N. J., cut blooms of some interesting hardy herbaceous plants, among which were *Epimedium alpinum*, *E. macranthum*, and its var., *violaceum*; *Mertensia Virginica*, with flowers of the most beautiful blue, and *Cassandra calyculata*. From John Henderson, Flushing, L. I., cut blooms of the hybrid perpetual Rose, "Paul Neron," this is the variety which, under the incorrect name of "Compte de Paris," has been sold repeatedly this season in the flower stores at $1 for a single cut bloom. Expanded flowers are 4 inches in diameter, of a light shade of crimson, and have the odor of the old English Moss Rose, all these qualities combine to make it a favorite variety. Peter Henderson, Jersey City, N. J., exhibited a cut bloom of a double Begonia Verschaffeltii. This, the first of the double flowered Begonias, originated, we believe, with Mr. A. Gilson, a colored gardener, in charge of Mr. Barton's grounds at Barrytown, N. Y. Mr. Gilson was also the raiser of *Achyranthes Gilsoni*, that has for some years, by its extensive cultivation as a massing plant, made his name famous. The Society adjourned to meet on Wednesday, June 7th, when the final arrangements will be made for the June Exhibition, which will be announced in the daily papers.

Catalogues Received.

The rush of spring catalogues is now over, and we give the few that have come in since our last, without classification.

R. H. HAINES, Malden, Ulster Co., N. Y. Berry baskets and crates.

CAIRO BOX AND BASKET CO., Cairo, Ill. Illustrated catalogue of baskets, boxes, and crates for fruit and vegetables of all kinds.

A. E. COOPER & Co., Cooper's Plains, Stuben Co., N. Y. Balcony and other excellent chairs for which this house is famous.

L. C. ROOT, Mohawk, N. Y. Bees, hives, and all appliances for the apiary. Mr. R. succeeds to the business of the late Mr. Quinby.

E. STEIGER, 22 and 24 Frankfort st., N. Y. Catalogues of Kindergarten matters, including books and materials.

J. A. VAUGHN, Carver, Mass., offers Cranberry plants, and Pond Lily roots.

WILLIAM BULL. New plant merchant, King's Road, Chelsea, London, S. W. (Eng). A wonderfully rich and abundantly illustrated catalogue of one of the leading establishments in the world.

CARL H. SCHULTZ, 860 Broadway, whose carefully prepared mineral waters we have known for many years, sends a descriptive catalogue of them.

Thrashing Machines.—"J. C.," Clay Co., Minn. It is difficult to say which is the best thrashing machine. Much depends upon the man who feeds it, and he may, by crowding it, or by feeding too lightly, make the best machine do very poor work. Several good machines are mentioned in the advertising columns, and it would be well to procure circulars from the different makers, and choose the one that seems most suitable.

The Berkshire Hog.—"Subscriber," Owensboro, Ky. Elsewhere will be found illustrated articles upon the Berkshire and the large white breed of hogs, which give the desired information. A pure Berkshire may have a few white hairs upon the shoulder, but should not be spotted with white. No one should buy a pig with any white hairs or spots, except upon the face or snout, and the feet, if he wishes to sell animals for breeding. There are some Berkshires that grow much larger and more rapidly than others, but there is, so far as we are aware, only one kind of these pigs kept in this country. Changes of locality, and differences of care and feeding, have a great effect in causing variations in any breed of animals, and it is in this way distinct families or strains become established.

The Fourth Annual Convention of Breeders of Short-horns.—The proceedings of the Fourth Annual Convention of Short-horn Breeders, which was held at Toronto, (Canada), on Dec. 3d and 4th, 1875, has been received. The report is entire, no part of the proceedings being expunged or omitted. It is of more than usual interest, as it contains the papers, hitherto suppressed, which were presented to the two previous Annual Conventions, by A. S. Matthews, of Wytheville, W. Va., and which criticised very severely the prevailing mania for fashionable pedigrees. The report is of great interest otherwise than for this, and very valuable to all breeders, whether of this or other classes of stock.

Value of Coal Ashes.—"W. C.," Saratoga Co., N. Y., says he "mixed half a bushel of hen manure, half a bushel of loam, and two bushels of coal ashes together, and used a pint of the mixture in the hill for potatoes, producing 300 bushels per acre." He advises using coal ashes upon heavy, wet land. Our experience with coal ashes is exactly this, that they are good upon heavy land, not as a fertilizer, but as a mechanical help in loosening the soil, and making it more porous. As a diluent for the strong hen manure, in the above case, they were useful, but in no other way. Very thorough experiments by Prof. Storer, at the Bussey Institution, show that coal ashes have no value as a fertilizer.

Saddle Galls.—"J. C. S.," Pendleton, S.C. To prevent saddle galls, the saddle should be lined with some smooth hard substance. Flannel or woolen cloth is bad. A hard finished, smooth rawhide lining, similar to those of the military saddles is preferable. Then, if the saddle is properly fitted to the horse's back, there will be no galls unless the horse is very hardly used. Galls should be washed with soap and water, and then with a solution of six grains of copperas or blue vitriol, to one tablespoonful of water, which will harden the surface and help to restore the growth of skin. White hairs growing upon healed galled spots cannot be prevented.

Cramp and Cholera.—"H. S. B.," Clay Co., Iowa. The indications of cramp in poultry are stiffness and rigidity of the limbs or neck; and of cholera, profuse diarrhea with discharge from the eyes. When subject to these diseases fowls may be destroyed at once, as it is more trouble to attempt a cure than the fowls are worth; the causes, which are cold, damp, or unwholesome food, should be removed as the best preventive.

Remedy for Scratches.—"A. P.," Washington, Pa. Scratches may be prevented by keeping the horse's heels free from mud or snow by washing in warm water, and then wiping them dry with a towel, and by regulating the bowels by laxative food, or mild laxative medicines so as to keep the system cool. To cure this disease when established is often very difficult. Repeated doses of salts, followed by doses of an ounce of *sulphite* of soda daily, with the substitution of crushed oats, bran, and linseed-meal for corn; together with continued washing of the heels with warm soap and water, and then rubbing them with glycerine, has frequently resulted in a permanent cure.

Protection from Dust when Thrashing.—"A Reader," Griggstown, N. J. When thrashing dusty oats or wheat, that have been smutty, we have used a piece of mosquito net folded several times, and wetted, and tied around the mouth and nose. A thin piece of sponge in a piece of mosquito net, which is tied around the mouth and nose, and kept wetted and washed whenever a rest is taken, is also a good protection against the dust.

Warbles—The Ox Gad-fly.—From July to September, but chiefly about August, a fly known as the Ox Gad-fly, (*Hypoderma bovis*), attacks cattle, and deposits its eggs upon their backs, probably by puncturing the skin, as the cattle make frantic efforts to escape its attack. The eggs soon become larvæ, which are thick white maggots, inhabiting a tumor beneath the skin along the spine, and which feed upon the pus or matter caused by their presence in the flesh. These swellings are called warbles. The easiest way to get rid of them is to squeeze the maggots out of the tumors, each of which has a small opening in it through which the larva breathes. As they are squeezed out they should be crushed. If a general effort was made, this pest could easily be destroyed or rendered very rare.

To use Hen Manure.—"E. H." Manure from the poultry-house is best mixed with six or eight times its bulk of loam. It can then be safely applied to any crop or seed.

Raising Water for Irrigation.—"R. E. B.," Macon, Ga. There is no way of making water run up hill except by using some mechanical power. A simple method of raising water is to use a cheap rotary pump operated by a one-horse power. A stream from a 3-inch pipe flowing for four hours, would irrigate one acre of ground, giving an inch in depth over the surface if equally distributed. For corn, this watering could be usefully repeated every week until the grain is set.

Iritis in a Horse.—"A. P.," Salem, Ill. Inflammation of the iris or pupil of the eye is an attack of rheumatism in that part of the organ, caused by cold or a disordered condition of the system. The eye is red, and the cornea or central part is of a muddy yellowish color. This yellow appearance is caused by pus which becomes absorbed on the subsidence of the inflammation until a renewed attack occurs. The proper treatment is to bathe the eye in warm water several times a day, and three times a day apply, with a camel's-hair pencil dipped in it, a solution of 12 grains of nitrate of silver in 4 ounces of pure rain water. The horse should be kept in a clean dark stable, free from vapors of ammonia.

A Plague of Mice.—We have frequently spoken of the encouragement of vermin by the reckless destruction of birds, such as owls and hawks. A notable case in point comes from Scotland in a part of which there is just now a plague of mice which are destroying the crops and ruining the farmers. This is so clearly attributable to the killing of owls and hawks, that the large land owners have begun to protect these birds, and have forbidden their destruction. Let us take a hint.

Refrigerating Houses.—"W. B. M.," Plymouth, N. Y. The refrigerating houses described and illustrated in the *American Agriculturist* of Oct., 1874, are made on a plan patented by Mr. Rankin, of Emporia, Kansas. No such cool chambers, in which the ice is kept in receptacle *above* them, can be made without infringing some patent or other. The moderate fee which is charged by Mr. Rankin, as a matter of form, to prevent a legal abandonment of his patent, is so small, as to be no impediment to the construction of such a refrigerator, either for a dairy or a fruit house.

Yield of Strawberries.—"P. A.," Guelph, Ont. The yield of strawberries depends upon circumstances, and is from nothing up to 3,000 quarts or more per acre. Upon the light sandy soil of Burlington Co., N. J., the average income from an acre of strawberries a few years ago, was $300. Last season, which was dry, and when the markets were poor, many fields did not pay the cost of gathering the crop. This is one of the risky crops, if grown on a large scale.

Fertilizer for Grass.—"B.," Prince Edwards Island. The best artificial fertilizer for grass is Peruvian guano, which contains ammonia, phosphoric acid, and some potash. This costs about $60 a ton; 150 to 200 lbs. to the acre would be a good dressing to be applied every second year.

Broom-Corn Planter.—"S. McC.," Lawrence Co., Ohio. The "Vanderveer Corn Planter," and several others may be used to drop broom corn, as well as corn, by horse-power; 18 acres a day may be planted with one of these machines. The "Keystone Planter" is well adapted for broom-corn, and is sold by R. A. Traver, of Charleston, Ill., along with seed and all other broom-corn and broom making appliances.

A Long-horn Herd-book.—After more than a century of existence and improvement, the old-fashioned, but not yet obsolete, long-horn cattle are to have a herd-book. A meeting of the breeders of these cattle, whose constancy beneath neglect is a characteristic of the English farmers, recently held a meeting at Bingley Hall, (England), for the purpose of forming a Long-horn Society, and establishing a herd-book for the record of pedigrees of the existing stock and their future progeny. This has been done in view of the alleged increasing interest manifested in this breed, which, however, we must say has not yet become apparent to the naked eye, at any of the exhibitions or stock fairs, where the long-horns are only conspicuous by their absence, and the utter neglect into which they have fallen. Nevertheless, we may see this breed before long resuscitated into notice. Two or three years ago we hazarded such a prognostication in view of the fickleness of public favor, and the many excellencies of this old-fashioned beef producing breed, and our prediction seems in a fair way to become verified.

Peanuts.—"L. T. C.," Whitfield Co., Ga. Peanuts need good soil, and if of a kind on which lime is beneficial, that should be applied. The land being well plowed, is marked off 30 to 36 inches apart, both ways; a little fertilizer is dropped at the crossings of the rows, and two peas, carefully shelled, are planted there. The ground is kept clean until the vines cover it. The Virginia peanut is much larger and better than the Carolina, and brings a higher price in the market.

Egg-Plant.—"R.," Mercer Co., Pa. This is a tropical plant, and seeds must be started in a hot-bed, or you can purchase the plants. Some kinds produce a fruit 6 inches or more in diameter. It is eaten green, when of the size of one's fist up to the time the seeds become hard, and show that they are ripe by turning brownish. The fruit is cut in slices half an inch or more thick, the rind pared off, and the slices freely sprinkled with salt, piled upon one another with a weight upon top, and left for an hour or two. This is to remove a slight bitterness. The pieces are then dipped in egg, covered with cracker or bread crumbs, and fried a delicate brown.

New Jersey at the Centennial.—Next to Pennsylvania, no State has, in proportion to its size, contributed so much to the Great Exhibition, not only in exhibits, but in direct outlay in money as New Jersey. Its State Building is regarded by many as the finest on the grounds, and besides contributing largely to the various departments, its very efficient State Commission proposes a Special Exhibition of all the cereal products of the State, to open on Sept. 25th, and continue for one week. A committee has been appointed for each county to induce the grain-growing farmers to exhibit their products, and it is designed to show one peck each of all the varieties of grains grown in the State. Our many New Jersey readers will make a note of this; they will be informed as to details by the committee of their county, but it is well for them to know what will be expected of them.

Length of Cut Feed.—"W. E. Z.," Cleveland, O. Hay or corn-fodder should be cut into half-inch lengths. The Baldwin fodder cutter, and the Gale copper-strip cutter, are both excellent machines.

Starch Factory Refuse.—"R. H. W.," N. Madison, Ind. The refuse of the corn-starch factories is valuable for food. It contains most of the oil and nitrogen of the grain, the larger portion of the starch only being removed. At ten cents per bushel for the "dry feed," which is the husk and coarser part of the grain, and five cents per bushel for the "white feed," which is the refuse of the inner part, it is cheap, compared with corn at 45 cents a bushel, and well worth hauling.

Cleaning Coat Collars.—"S.," Washington Co., Md. The best material for cleaning coat collars and grease spots of all kinds, is pure benzine. The article is sold at the principal drug-stores in cities. That used by painters is not pure enough, and has a very unpleasant odor, which the pure article has not, and the little which it has soon disappears. If this cannot be obtained, strong alcohol (95 per cent) will clean collars very well. A mixture of equal parts of strong alcohol and water of ammonia is also used. The trouble with all these liquids is that not enough is used; a small quantity only softens and spreads the grease spot; they should be applied in sufficient quantity and repeated, to not only dissolve the foreign matter, but to *wash it out*.

Centennial Music.—Oliver Ditson & Co., Boston, have issued a timely collection of national songs, including, besides those of America, English, German, French, Irish, and others, so that people of all countries who wish to be patriotic in song this Centennial Year, are well provided for at 40c. paper, and 50c. in boards. After the above was in type, we received the "*Liberty Bell*," a similar, but in most respects different collection, published by Wm. A. Pond & Co., New York.

Rumbling of the Intestines.—"M. B. M.," Rolla, Mo. This disagreeable noise may be caused by flatulence, or by giving the horse too much water before starting upon the road. The remedy lies in avoiding the latter, and in giving less concentrated food than clear grain. Cut feed, moistened and lightly salted, and ground or crushed grain, would be better than whole grain and dry hay.

Report of Pork Packing at the West.

From a supplementary report to the Cincinnati Chamber of Commerce, which contains valuable statistics of the Western Pork Packing for a number of years past, and for which we are indebted to Mr. Sidney Maxwell, Superintendent, we take the following interesting tabular statement of the comparative number of hogs packed in the West at all points for 27 years past:

Years.	*No. of Hogs.*	*Years.*	*No. of Hogs.*
1849-50	1,652,220	1863-64	3,261,105
1850-51	1,332,867	1864-65	2,422,779
1851-52	1,182,846	1865-66	1,785,955
1852-53	2,201,110	1866-67	2,490,791
1853-54	2,534,770	1867-68	2,781,084
1854-55	2,124,404	1868-69	2,499,873
1855-56	2,489,502	1869-70	3,6[illegible]5,312
1856-57	1,818,468	1870-71	3,623,404
1857-58	2,210,778	1871-72	4,782,403
1858-59	2,465,552	1872-73	5,456,004
1859-60	2,350,822	1873-74	5,383,810
1860-61	2,155,702	1874-75	5,537,124
1861-62	2,893,666	1875-76	4,850,192
1862-63	4,069,520		

The following table showing the average gross weight, average yield of lard (all kinds) per head, and average cost per 100 lbs., gross, during the past six winter packing seasons in Cincinnati since 1870 is also given:

	Gross Weight.	*Yield of Lard per head.*	*Average Cost.*
1870-71	298.8	42.62	.....
1871-72	289.2	41.02	$4 26.48
1872-73	304 9	45.67	3 92.34
1873-74	280.7	39.7	4 58.24
1874-75	278.25	41.77	6 99.17
1875-76	273.68	37.8	7 27.53

It will be noticed that while the number of hogs packed in 1875-6 is less than for some years past, the gross weight and yield of lard is also considerably less than at any time since 1870. This shows that the stock of hogs has been closely drawn upon, and there will probably be a consequent scarcity the coming season. A legitimate inference, which, however, every one may draw for himself, is that this stock can not easily be made up this year so as to reduce prices to a large extent.

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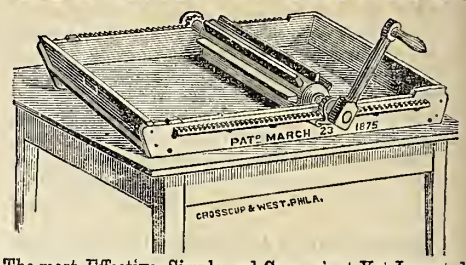

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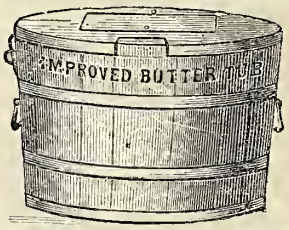

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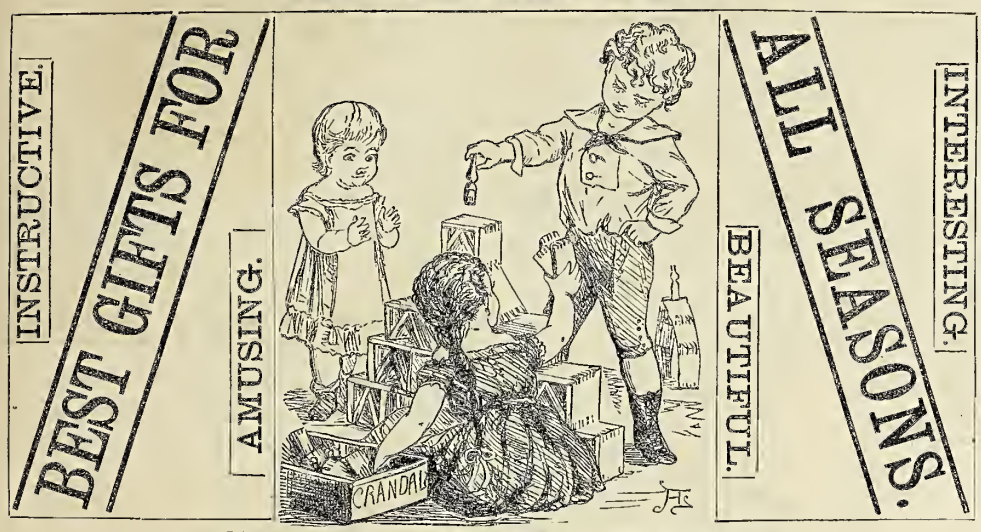

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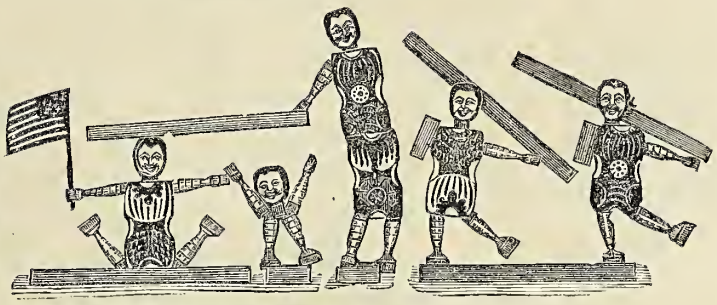

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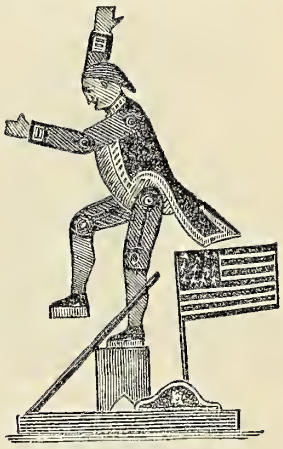

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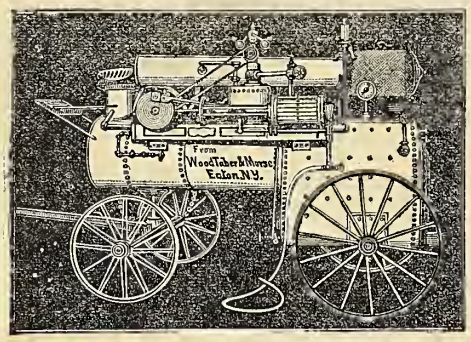

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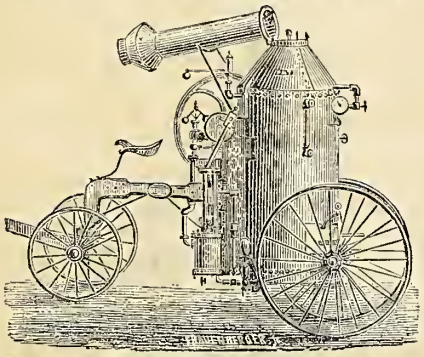

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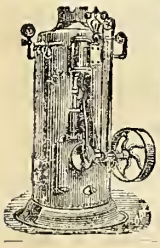

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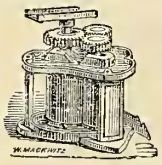

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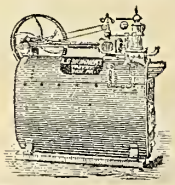

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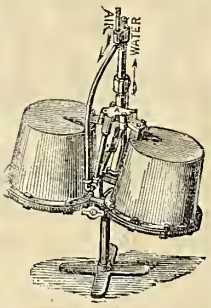

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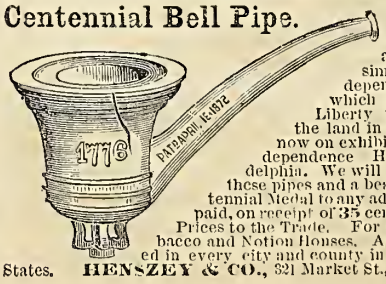

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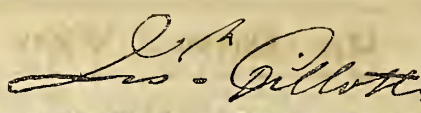

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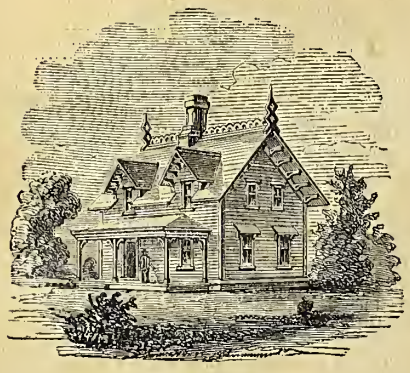

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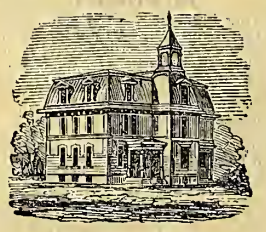

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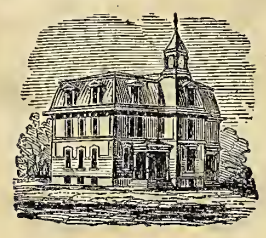

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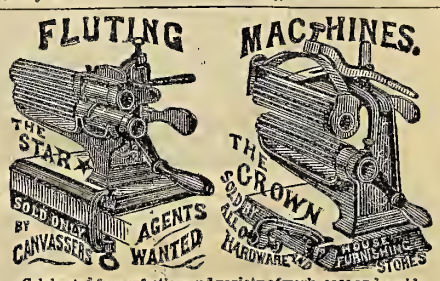

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Calendar for July.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon sets.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	S	4 25	7 40	0 40	4 31	7 34	0 44	4 37	7 29	0 48
2	S	4 26	7 40	1 6	4 32	7 34	1 10	4 37	7 29	1 17
3	M	4 27	7 40	1 52	4 33	7 34	1 39	4 38	7 29	1 46
4	T	4 27	7 39	2 19	4 33	7 33	2 24	4 38	7 28	2 33
5	W	4 28	7 39	3 4	4 34	7 33	3 13	4 39	7 28	3 19
6	T	4 29	7 39	rises	4 35	7 33	rises	4 40	7 28	rises
7	F	4 29	7 39	8 45	4 35	7 33	8 39	4 40	7 28	8 33
8	S	4 30	7 38	9 12	4 36	7 32	9 8	4 41	7 27	9 3
9	S	4 31	7 38	9 36	4 37	7 32	9 33	4 42	7 27	9 30
10	M	4 32	7 38	9 56	4 37	7 32	9 54	4 42	7 27	9 52
11	T	4 33	7 37	10 16	4 38	7 31	10 15	4 43	7 26	10 15
12	W	4 33	7 37	10 37	4 39	7 31	10 38	4 44	7 26	10 38
13	T	4 34	7 36	10 56	4 40	7 30	10 58	4 45	7 25	11 0
14	F	4 35	7 36	11 21	4 40	7 30	11 21	4 45	7 25	11 27
15	S	4 36	7 35	11 51	4 41	7 29	11 57	4 46	7 24	12 0
16	S	4 37	7 34	morn	4 42	7 29	morn	4 47	7 24	morn
17	M	4 37	7 34	0 29	4 43	7 28	0 33	4 48	7 23	0 41
18	T	4 38	7 33	1 15	4 44	7 28	1 22	4 49	7 23	1 30
19	W	4 39	7 33	2 17	4 45	7 27	2 25	4 50	7 22	2 32
20	T	4 40	7 32	sets	4 45	7 26	sets	4 50	7 21	sets.
21	F	4 41	7 31	8 16	4 46	7 26	8 11	4 51	7 21	8 6
22	S	4 42	7 30	8 48	4 47	7 25	8 45	4 52	7 20	8 42
23	S	4 43	7 29	9 15	4 48	7 24	9 13	4 53	7 19	9 11
24	M	4 44	7 28	9 37	4 49	7 23	9 37	4 53	7 18	9 27
25	T	4 45	7 27	9 58	4 50	7 22	10 0	4 54	7 17	10 1
26	W	4 46	7 26	10 24	4 51	7 21	10 30	4 55	7 17	10 32
27	T	4 47	7 25	10 40	4 52	7 20	10 43	4 56	7 16	10 47
28	F	4 48	7 24	11 8	4 52	7 19	11 13	4 56	7 15	11 19
29	S	4 49	7 23	11 39	4 53	7 18	11 45	4 57	7 14	11 52
30	S	4 50	7 22	morn	4 54	7 18	morn	4 58	7 14	morn
31	M	4 51	7 21	0 15	4 55	7 17	0 22	4 59	7 13	0 29

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
Full M'n	6	10 51 mo.	10 42 mo.	10 30 mo	10 18 mo.	9 48 mo.
3d Quart.	14	9 12 mo.	9 0 me.	8 48 mo	8 36 mo.	8 6 mo.
New M'n	20	0 9 2 st	11 57 ev.	11 45 ev.	11 33 ev.	11 3 ev.
1st Quart	27	10 35 ev.	10 23 ev.	10 11 ev.	9 59 ev.	9 29 ev.

AMERICAN AGRICULTURIST.

NEW YORK, JULY, 1876.

July is considered as the harvest month, and as this year, and especially in this particular month, we are all making comparisons between things as they were a hundred years ago and as they now are, we may very well consider how much better we are provided with harvesting implements than our forefathers were. Instead of stooping painfully over our crops, and cutting them by handfuls with the sickle, we now lay them down with the reaper all ready to be bound, or even lay down the bound sheaves. In no department of human industry has there been a greater saving of labor, than in harvest work. It has now become not a work to be dreaded, but the pleasing occupation of gathering in the abundant fruits of our labors, an occupation which should be accompanied by thankfulness and contentment. The reaper, mower, tedder, horse-rake, unloading-fork, and thrashing machine, all worked by horses or by steam, are the contribution which mechanics have made to agriculture, within the latter part of the past century, and agriculture owes her sister art a heavy debt of gratitude for it.

Hints about Work.

In the Field.—There are some precautions to be observed in working out of doors at this season, which may add much to the comfort, and may preserve health, or save life. The most important is to avoid drinking cold water when heated. We have worked a whole day without drinking, except at the usual resting spells, and know that it can be done by any one who will resist the desire to swallow copious drafts of water. The fluid dilutes the blood, weakens the system, greatly increases perspiration, and this in its turn excites thirst. To pour some cold water upon the wrists, and to bathe the temples, will reduce the temperature of the body very rapidly. As a protection to the head we wear a white handkerchief or a cabbage leaf in the hat, and a white handkerchief fastened to the hat behind, so as to fall loosely over the back of the neck. If one must drink, a small quantity of oatmeal stirred in the water, will be wholesome and nutritious.

The Laws of Health require careful observation. Decomposition is very active during the hot weather, and all filth and refuse of whatever kind, should be removed to the compost heap and well covered with earth. Sinks, cellars, drains, cesspools, and all such places, may be cheaply disinfected by pouring into them or sprinkling about them, a pailful of water in which a pound of copperas (sulphate of iron) has been dissolved. A quantity of ground plaster mixed with offensive liquid matter, or sprinkled about stable drains, or other bad smelling moist places, will be very serviceable.

Weeds.—"Ill weeds now grow apace." In the hurry of harvest work these should not be neglected. A day's delay may not hurt the crop, while it may make a wonderful difference in the growth of the weeds. To cultivate in a dry time, will do the most execution amongst weeds, and by keeping the soil mellow, will make it more absorbent and retentive of moisture.

Root Crops.—Mangels or ruta-bagas need to have the soil mellow and moist, and must be kept free from weeds. One plant too many in the row, is a weed as much as a thistle or a rag-weed, and wherever the plants are too thick, they should be thinned unsparingly. Ruta-bagas may be sown up to the middle of the month. Dusting the young plants while still in the seed-leaf with fine guano, will help to keep off the flea, and will stimulate the plants to push out the rough leaves, when they will be safe from this pest. After July 15th, white turnips should be sown in place of ruta-bagas on northern farms.

Fodder Corn for soiling, may still be sown in succession up to the end of the month. The more this crop is grown and used, the more valuable it is found to be. It should not be sown broadcast except upon the very richest soil, and even then the extra labor of drilling it will be well repaid. Drills should be 30 inches apart, and the seed an inch apart in the drill. To get a good growth, this crop should be as well cultivated as the main crop. Four bushels of seed per acre is needed.

Corn.—Constant cultivation is very important for this crop. No other shows so much benefit from it. Our plan is to cultivate on the level, going close to the rows. If there are many weeds in the rows between the stalks, we throw a little earth to the plants to smother the weeds. Afterwards, if necessary, this soil may be leveled with the hoe at the last weeding. Hilling corn is not, as some farmers think, needed to steady the plants.

Potatoes suffer more from weeds than any other crop. One weed will take up and evaporate a good deal of moisture from the soil, and rob the crop of what it greatly needs. This loss of moisture is not often thought of in considering the effect of weeds, but it is very important. When too late to be killed by cultivation, the weeds should be hand-pulled.

Peas and Oats, grown for fodder, may be cut with the reaper if they have not lodged. Otherwise the best plan is to cut them with the scythe, not as grass is mown, but by drawing them towards the mower in bunches, with the blade of the scythe, when the loose bunches may be left to dry until ready to haul to the barn. When cut in blossom and well cured, this mixed crop is worth more than clover hay.

Wheat.—The best time for cutting wheat is a matter of dispute. We choose that time when the greater part of the grain is in such a condition that it can easily be crushed to a soft moist powder between the thumb and finger nails, and there is no sign of milkiness or mushiness about it. If cut earlier than this the grain shrinks, if cut later it is lost by shelling, although its quality for seed and for grinding is best when cut dead ripe. The time of cutting is a matter of economy and convenience.

Binding Grain.—One of the common small wastes of the farm arises from careless binding and shocking grain. Sheaves fall to pieces, or shocks overturn, and grain is wasted as well as much time. See that the bands are strong enough, long enough, and well bound, and the shocks well put up and safely capped. Although the caps may not be needed, yet the grain is safe, and in case of a sudden thunder shower one can rest easy, knowing that no harm can happen to this crop.

Thrashing.—To thrash the grain as soon as it is drawn from the field, and to market it, if it is dry

enough, is generally the best plan. The loss of weight, and that from vermin and other risks, are saved; the labor of stacking or putting it in the barn, and a second handling are also saved, and with the cash in his pocket, a farmer avoids any loss in value, and if he misses a rise, he will on the whole have saved more than this might have amounted to, and has had the use of the money besides.

The Granary.—If grain is stored, care should be taken to preserve it from vermin, and to turn it occasionally, lest it might heat and mildew.

Stock.—See hints for last month, which apply to this month as well.

Take a Holiday.—No farmer or mechanic should miss seeing the Centennial Exhibition. If he can not go, he should send one at least of his sons. If he can not afford to do that, he should take what recreation he can in the most convenient manner. Family parties, neighborly picnics to interesting places, and social gatherings, make us better acquainted with each other, and show the best points of people whom we might suppose had but little good about them. In business no one is seen at his best, and we want to think as well of our neighbors as we possibly can.

In the Southern States, the "plowing" of cotton, and the planting of food and fodder crops occupy this month. But cotton should be "plowed" with the cultivator. Injury to the roots weakens the plants, and deep culture dries the soil. It is shallow culture which keeps the surface mellow and loose, preserves the moisture of the soil, and makes it absorbent and retentive. A "scraper" or shallow cultivator should be used in preference to a plow.

Sweet Potatoes may still be planted, and there is no better or cheaper material for making pork than this. If the weather is dry when the plants are set out, all that is needed is to dip the roots in a mud made of cow dung and loam, and leave the soil dishing around the plants. After the first shower hoe the moist earth around the plant, filling the hollow. Few will be lost that are planted in the afternoon.

The Second Crop of "Round" Potatoes, may be planted this month and next. The sets should be planted deeply, which will keep them cool, and tend to throw out a strong growth of roots before the leaves appear above the surface.

Fodder Crops.—For the Southern States rutabagas will be found a valuable winter forage crop. Sown towards the end of this month upon fine mellow soil, *rolled after sowing*, and fertilized with a moderate dressing of superphosphate, this crop will furnish the best of feed for sheep, which will consume it upon the ground if confined in hurdles or nets. They are also valuable feed for cows, and if sliced are remarkably healthful and acceptable to horses and mules.

The Cow Pea is worthy of being sown by itself, although at the last plowing of cotton, they may be plowed in between the rows. This is one of the fodder crops which can be grown most profitably in the South, and is as valuable as the northern clover, when well cured.

Cabbages.—Another valuable fodder crop in the South is the cabbage. For field culture the plants may be set out this month, on good soil, and for later plantings the seed may be sown in beds early this month. Superphosphate or guano is an excellent fertilizer for this crop. By this time the bothersome flea has departed for the season.

Work in the Horticultural Departments.

With plants generally, this month is almost a season of rest. Trees have made their early increase of wood, and are now maturing it. The hot weather checks rapid growth in most garden vegetables, but the weeds, especially those from tropical countries, are in their glory. The main work in all departments is weeds. Weeds in orchard and fruit garden; weeds in the kitchen and flower garden; weeds in the greenhouse and fence corners; weeds before, behind, and all around. If one cannot keep his crops clear of weeds, he either has not enough force or too much land in cultivation.—N. B. Let every one who can, visit the Centennial exhibition.

Orchard and Nursery.

Young Trees will suffer from the hot sun and dryness. See to the mulch, if one is not already put on, lose no time in applying it, and replace any that may have been disturbed by the wind or otherwise. If a young tree seems to be suffering, give it an extra mulch, and if it has a long, naked trunk, tie some hay or straw around to shade it.

Grafts set this spring need attention. If they push too vigorously, pinch the end out; if too many buds start, remove useless shoots. See that shoots from the stock do not rob the graft.

Seedlings, especially of forest trees, will suffer from the hot sun, and must be shaded. A lattice-work of laths or other slats is best; a good substitute is to stick leafy branches all over the bed.

Insects.—On the first appearance of a web of the Tent caterpillar, destroy it and its contents; do this early in the morning, when the colony is at home. Watch for other insects, and recollect that every day's delay in killing them greatly increases the difficulty of the task.

Thinning the fruit is especially necessary on young trees disposed to overbear. Removing half or more of the crop of fruit to be marketed, is found to pay in the increased price of better fruit.

Fruit Garden.

What is said under orchard in relation to mulching and insects, applies with equal force to the fruit garden.

Strawberries in all but the northernmost localities, are now clear of fruit, and the after treatment of the beds will depend upon the method of culture. Where the plants are kept in stools or single rows, remove the mulch, cut off all runners, fork in some fine manure, and replace the mulch; the few weeds that come up through the mulch may be hand-pulled; continue to cut the runners as they grow. If the bedding or alternate method is followed, fork up and manure the spaces between the beds and let the runners fill them.

Mowing the Leaves of strawberries, as soon as the crop is off is commended by some, who claim that the new growth is finer and the plants more fruitful. We have never tried this plan, but propose to do so with a part of a bed.

Raspberries follow directly upon strawberries, and in picking require even more care than strawberries; cool off the fruit before packing in crates. All the varieties that push up new canes from the root must have provision made for next year's crop by saving 3 or 4 shoots from each stool; as soon as the fruit is off, cut away the old canes and train up the new ones; when these reach 4 feet in hight, stop their upward growth by pinching. Black-caps and the red sorts that root from the tips of the canes, bear fruit on new branches from the lower part of the plant, but do not spread by suckers; the old wood of these is to be cut out, and the new branches cared for.

Blackberries get very heavy with fruit, and should be kept securely tied to stakes; train up 3 or 4 new shoots to form canes to bear next year; stop them when 5 feet high. Cut out old canes when the fruit is off. If the "rust" appears, cut out the affected canes and burn to prevent its spreading.

Grape-vines.—In regularly trained vines the new growth must be kept tied up to the trellis. As laterals appear, pinch them back to one leaf. Upon the first signs of mildew, apply sulphur by means of a bellows. Most of the troublesome insects at this season are kept down by hand-picking. Rose-bugs and other small beetles may be shaken off early in the morning, while torpid, and caught in a dish of water. Rub off all shoots that appear where canes are not wanted.

Currants.—Where the leaves suddenly wilt, it is likely that a borer will be found in the stem. The work of the currant worm is at once seen by the disappearance of the leaves. Lose no time in applying white hellebore, either dusting on the powder, or mixing two ounces of the powder, first well stirred with a quart or two of boiling water, in an ordinary pailful of cold water, and apply with a syringe.

Pears will usually need free thinning, especially the large varieties. If the slug appears on the leaves, dust them with fine slaked lime. For the blight there is no known remedy or preventive. Its presence is not seen until the mischief is done. All that can be done is to cut away and burn the blighted portions, even if it take the whole tree.

Kitchen Garden.

The early crops will now be off, and the ground should be made ready for setting out the later ones as soon as there are sufficient rains. In time of drouth keep the surface stirred, as a mellow surface soil not only prevents evaporation, but it absorbs dews. Besides these the all important office of killing the weeds is performed. Now the "pusley" and crab grass grow apace. It is a common saying that he is a poor gardener who "lets his pusley get ahead of him." Keep the hand-hoes, wheel-hoes, horse and hand cultivators, in motion, and do not forget that great execution can be done among young weeds with a sharp, long-toothed steel rake. Those who "make garden" for once and all in the spring, deprive themselves of much of the enjoyment they might have by sowing for successive crops. We here enumerate such vegetables that may still be sown with the hope of a satisfactory return.

Beans.—Sow bush sorts. If Limas and other climbers do not take to the pole, give them a little help; pinch the tips when they get to the top of the pole and also the ends of long straggling branches. In northern climates it is a mistake to give these poles over 6 or 8 feet high.

Beets.—Keep the main crop of late kinds well weeded and thinned. In hot weather, spinach runs at once to seed, young beets make a capital substitute, and some sow especially for this use.

Cabbages and Cauliflowers.—Set out plants for the late crops whenever there is a favorable time. In taking plants from the seed bed, reject all that have malformed roots, and also all "blind" plants; it sometimes happens that the terminal bud, or growing point, from some cause, is injured or imperfect, and such are called "blind." Use the rake freely among newly set crops.

Carrots.—Thin, if not already done, and keep the hoe at work until the leaves get large enough to prevent. Where young roots are desired, sow seed.

Celery.—Set in the first favorable spell on the level ground in rows 3 feet apart, and the plants 6 inches distant. But few follow the old plan of setting in trenches.

Corn.—Sow the early sorts at intervals of two weeks to the end of the month; if the later sown fails to form ears, it will be useful fodder. Cultivate often.

Cucumbers may still be planted for pickles early in the month.

Egg Plant should be forwarded by frequent hoeing and occasional doses of liquid manure. When the fruit gets large, put hay or straw under it, to keep it from the ground. Go over the plants daily and pick off the potato bugs, which seem to prefer this to all other food.

Endive.—Where this is liked as a salad, seeds for a late crop may be sown.

Herbs.—Transplant from seed bed, sage, thyme, and other culinary herbs, putting them 8 inches apart in rows a foot apart.

Lettuce.—Seeds may be sown late in the month for a late crop.

Melons.—Keep hoed as long as the vines will allow. Remove all fruit not likely to ripen.

Peas.—Sow early sorts, putting in the seed at least 4 inches deep. Late crops sometimes escape mildew, but oftener do not.

Seeds of those kinds it is desired to save should be labeled at once, and when dry, stored in a cool, dry place, out of reach of mice.

Sweet Potatoes.—Hoe until the vines cover the ground, and when the stems begin to take root, lift them occasionally to prevent it.

Squashes.—There is no help for the malodorous squash-bug, but hand-picking and crushing the eggs which are found in patches on the under-side of the leaves. Hoe until the vines cover the ground, and do not disturb them if they take root.

Tomatoes.—Continue to tie to trellis; where no support is used, place brush under the plants to keep the fruit from the ground.

Turnips.—Weed and thin the ruta-baga sorts and sow white and yellow varieties late in the month.

Walks and Weeds.—Keep the paths in good order, and keep weeds not only from among the crops, but out of fence corners and all other places where they may mature their seeds.

Flower Garden and Lawn.

Lawns will require cutting often to keep the turf looking well, and the only remedy for annual weeds, which are often troublesome, is frequent mowing. Where the grass grows close to the trees and shrubbery, a grass-hook should be used, else the mowing-machine is likely to injure the trunk or stem.

Climbers, as they grow, should be trained to whatever support is used, else they grow straggling, and are injured by severe storms.

Gladioluses, Tuberoses, and Dahlias, all require stakes to support the stalks. Stakes made of pine and painted may be had at most horticultural stores. Those cut from straight brush answer well.

Annuals of some of the quick-growing sorts may still be sown for late fall flowering.

Perennials must be kept free from weeds. Sow seeds as fast as they ripen, especially of

Clematis and other sorts which will not grow until the second year, if not sown when first ripe.

Foliage Plants.—Where beds of Coleus or other colored-leaved plants are planted out, they require considerable care in pinching and keeping in proper shape, else the effect is destroyed.

Greenhouse and Window Plants.

The main work this month will be to keep the house properly ventilated and watered, taking care to prevent the increase of insects through neglect. Shading of some sort should be used, either lattice work or a coat of whitewash.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending June 13th, 1876, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	269,000	5,417,000	1,311,000	357,000	205,000	1,067,000
26 d's *last* m'th	291,000	1,136,000	1,334,000	83,000	221,000	901,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	329,000	4,451,000	3,101,000	381,000	15,000	1,111,000
26 d's *last* m'th	337,000	2,623,000	1,211,000	117,000	41,000	816,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1876	269,000	5,417,000	1,311,000	357,000	205,000	1,067,000
25 days 1875	267,000	3,315,000	2,604,000	37,000	161,000	916,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1876	329,000	4,451,000	3,101,000	381,000	15,000	1,111,000
25 days 1875	381,000	4,102,000	2,817,000	61,000	151,000	1,363,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
June 9, 1876	1,121,293	625,818	3,969	15,674	885,042	507,157
May 8, 1876	1,563,826	172,090	16,365	33,801	437,387	450,643
Apr. 10, 1876	3,393,074	232,140	68,429	200,381	706,282	436,942
Mar. 6, 1876	4,473,653	302,026	82,562	441,073	757,457	377,273
Jan. 10, 1876	5,802,293	663,982	100,741	325,191	1,080,300	307,433
Dec. 7, 1875	5,878,036	816,962	99,908	305,961	1,252,005	258,364
May 11, 1875	969,804	1,542,924	16,124	16,537	545,209	229,655
Jan. 11, 1875	3,675,122	1,049,900	50,889	191,470	877,014	145,647

4. *Exports from New York, Jan. 1, to June 10.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1876	885,654	11,364,601	6,088,000	289,500	25,018	161,641	668,503
1875	784,328	9,989,147	5,515,451	97,487	165	51,990	213,582
1874	957,783	15,083,546	7,021,960	443,103	100	87,585	236,916
1873	526,562	3,241,919	5,398,449	20,823	16,526	14,646	38,200

5. *Tide-water Receipts at Albany, from opening of navigation to June 1:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
1876	7,000	3,343,000	685,600	203,900	91,000	888,700	132,100
1875	5,500	1,140,800	302,600	36,800	——	327,100	147,400

Gold has been up to 113⅜, and down to 112¼, closing June 12, at 112¼, as against 112⅞ on May 13, and 113 on April 12....A very extensive movement has been reported in the Breadstuff line, since our last, largely on export account, at variable prices, closing generally with increasing firmness. The export inquiry has been notably animated for Spring Wheat, the better qualities of Corn, and prime Rye. The purchases of Wheat and Corn for shipment, have been largely for the English markets. The dealings in Rye have been almost exclusively for the German markets. Supplies of Wheat and Corn have been liberal at the ruling figures. Some export demand has been also noted for Oats, chiefly for France. Barley has been quiet, and altogether nominal. A sample of the new crop of California Barley was exhibited on 'change here on Thursday, June 8th. It was of good quality and color. Flour has been in active request, mostly for shipment to Europe and the West Indies; the home trade calls having been moderate ...Cotton has been more freely dealt in, but at lower prices....Provisions have also been more active; hog products, however, have been much depressed and unsettled in price. Beef, Butter, Cheese, and Eggs also lower....Hops, Seeds, Hay, and Straw have been less sought after, and prices have favored buyers....Tobacco has been in good demand, and held with more firmness....Wool has been offered more freely, and at generally reduced figures, without leading to any very decided increase in the demand, especially by manufacturers. The recent failures in this interest, have had a depressing effect .. Ocean Grain freights have been unusually active, but at variable rates. Grain rates by steam to Liverpool, closed on the 12th June at 8¼@8¾*d*; to Glasgow at 8½@9*d*; to Hamburgh at equal to 12@13*d*. per bushel. Provisions by steam to Liverpool, 40*s*.@50*s*. per ton; Cotton at $^5/_{16}$*d*. ℔ ℔. Grain tonnage for Cork and orders, at 6*s*.6*d*.@6*s*.7½*d*. per quarter. Grain rates from San Francisco to Liverpool, for the maturing crop, quoted at 58*s*.@65*s*.

CURRENT WHOLESALE PRICES.

	May 13.	June 13.
PRICE OF GOLD	112 5-8	112 1-2
FLOUR—Super to Extra State	$4 00 @ 5 50	$4 00 @ 5 60
Super to Extra Southern	4 20 @ 9 00	4 10 @ 9 25
Extra Western	5 00 @10 00	5 00 @10 00
Extra Genesee	5 65 @ 7 00	5 65 @ 7 25
Superfine Western	4 10 @ 4 50	4 00 @ 4 50
RYE FLOUR	3 50 @ 5 10	3 50 @ 5 20
CORN-MEAL	2 90 @ 3 60	2 75 @ 3 45
WHEAT—All kinds of White	1 35 @ 1 60	1 30 @ 1 55
All kinds of Red and Amber	1 05 @ 1 50	1 10 @ 1 45
CORN—Yellow	63 @ 67	60 @ 64
Mixed	57½@ 63	52 @ 60
White	58 @ 70	60 @ 66
OATS—Western	37 @ 52	35 @ 48
State	40 @ 53	40 @ 49
RYE	79 @ 92½	72 @ 93
BARLEY	Nominal.	Nominal.
HAY—Bale, ℔ 100 ℔s	70 @ 1 12½	70 @ 1 00
STRAW, ℔ 100 ℔s	60 @ 1 12½	60 @ 1 10
COTTON—Middlings, ℔ ℔	12½@ 12⅞	12 @ 12¼
HOPS—Crop of 1875, ℔ ℔	12 @ 18	10 @ 17
FEATHERS—Live Geese, ℔ ℔.	35 @ 60	30 @ 60
SEED—Clover, ℔ ℔	16½@ 17	16 @ 16½
Timothy, ℔ bushel	2 75 @ 3 00	2 75 @ 2 85
FLAX, ℔ bushel	1 50 @ 1 60	1 50 @ 1 55
SUGAR—Refi'g & Grocery ℔ ℔	6¾@ 9⅛	6⅞@ 9
MOLASSES, Cuba, ℔ gal.	32 @ 40	28 @ 37½
New Orleans, new crop, ℔ gal	50 @ 60	45 @ 60
COFFEE—Rio (Gold)	15½@ 18½	14¾@ 17¾
TOBACCO, Kentucky, &c., ℔ ℔.	6 @ 25	6 @ 25
Seed Leaf, ℔ ℔	5 @ 35	5 @ 35
WOOL—Domestic Fleece, ℔ ℔	25 @ 50	20 @ 46
Domestic, pulled, ℔ ℔	22 @ 38	20 @ 38
California, clip	12 @ 30	12 @ 25
TALLOW, ℔ ℔	8½@ 8⅝	8⅜@ 8¾
OIL-CAKE—℔ ton	39 50 @40 00	40 00 @41 00
PORK—Mess, ℔ barrel	21 00 @21 25	19 50 @ —
Prime Mess, ℔ barrel	21 00 @21 25	Nominal.
BEEF—Plain mess	12 00 @12 50	10 00 @11 00
LARD, in trcs. & bbls, ℔ 100 ℔	12 62½@13 25	11 60 @11 65
BUTTER—State, ℔ ℔	23 @ 32	20 @ 28
Western, poor to fancy, ℔ ℔.	17 @ 30	13 @ 26
CHEESE	4½@ 13	4 @ 11
BEANS—℔ bushel	50 @ 1 62½	75 @ 1 45
PEAS—Canada, free, ℔ bu	1 15 @ 1 20	1 10 @ 1 15
EGGS—Fresh, ℔ dozen	12½@ 15½	11 @ 14½
POULTRY—Fowls	13 @ 20	11 @ 18
Capons, ℔ ℔	30 @ 35	— @ —
Turkeys—℔ ℔	11 @ 19	8 @ 16
Geese, ℔ pair	75 @ 2 25	1 00 @ 2 50
Geese, ℔ ℔	— @ —	— @ —
Ducks, ℔ pair	65 @ 1 25	50 @ 1 12½
Ducks, ℔ ℔	— @ —	— @ —
Roosters, ℔ ℔	7 @ 8	6 @ 7
Chickens, spring, ℔ pair	60 @ 1 12½	50 @ 1 00
Chickens, dry pick'd ℔	23 @ 40	25 @ 35
PLOVER, ℔ doz	87½@ 1 12½	— @ —
DUCKS, Wild, ℔ pair	— @ —	— @ —
SNIPE, per doz	30 @ 1 75	— @ —
PIGEONS, wild, ℔ dozen	75 @ 1 50	50 @ 75
" tame, ℔ dozen	— @ —	1 12½@ 2 00
LETTUCE, ℔ 100 heads	3 50 @ 4 25	1 00 @ 1 50
CUCUMBERS, hot-house, ℔ doz	1 00 @ 1 50	— @ —
" ℔ crate	2 00 @ 4 00	1 50 @ 2 50
TURNIPS ℔ 100 bunches	— @ —	2 50 @ 4 00
CARROTS, ℔ bbl	— @ —	— @ —
BEETS, ℔ bbl	— @ —	— @ —
" ℔ crate	1 25 @ 1 50	1 00 @ 1 25
STRING BEANS, ℔ crate	1 50 @ 3 00	75 @ 1 25
CABBAGES—℔ 100	4 00 @ 8 00	— @ —
" ℔ bbl	1 25 @ 1 75	1 00 @ 1 50
ONIONS—℔ bbl	1 00 @ 6 00	— @ —
" ℔ crate	1 50 @ 1 75	1 00 @ 1 25
POTATOES—℔ bbl	50 @ 1 50	75 @ 1 50
" New ℔ bbl	3 00 @ 5 00	2 00 @ 7 00
SWEET POTATOES—℔ bbl	3 00 @ 4 50	— @ —
BROOM-CORN	3 @ 10	3 @ 10
GREEN PEAS, ℔ bbl	— @ —	1 00 @ 4 00
TOMATOES, ℔ etc	50 @ 65	75 @ 80
" ℔ box	— @ —	1 75 @ 4 00
RHUBARB, ℔ 100 bunches	2 00 @ 4 00	1 00 @ 2 00
ASPARAGUS, ℔ doz. bunches	1 50 @ 3 00	60 @ 1 25
RADISHES, ℔ 100 bunches	1 50 @ 3 00	50 @ —
APPLES—℔ barrel	2 75 @ 4 50	1 50 @ 3 75
CRANBERRIES—℔ bbl	13 00 @15 00	— @ —
" ℔ crate	4 00 @ 5 00	— @ —
SQUASH, ℔ bbl	1 50 @ 2 50	— @ —
ORANGES, Florida, ℔ bbl	— @ —	— @ —
STRAWBERRIES, ℔ quart	25 @ 45	3 @ 10
MAPLE SUGAR, ℔ ℔	6 @ 11	6 @ 10
MAPLE SYRUP, ℔ gallon	62½@ 1 00	65 @ 1 00

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
May 22	9,587	49	4,575	24,389	22,957	61,557
May 29	7,527	70	4,624	23,967	23,996	60,184
June 5	10,193	54	4,984	27,211	23,498	65,940
June 12	9,750	68	3,169	21,597	18,448	53,032
Total for 4 Weeks	37,057	241	17,352	97,164	88,899	240,713
do. *for prev. 5 Weeks*	45,647	253	16,219	80,928	106,428	249,475

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	9,264	60	4,838	24,291	22,224
do. do. *last Month*	9,129	50	3,244	16,185	21,085
do. do. *prev's Month*	7,889	58	1,282	14,819	20,181

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
May 22	8½@11½c.	9½@10½c.	9¾c.
May 29	7½@11½c.	9½@10 c.	9½c.
June 5	9 @11 c.	9½@10 c.	9¾c.
June 12	7 @11 c.	8¾@ 9¾c.	9¼c.

Beeves.—The course of the market has been very unsatisfactory to dealers, many things having conspired to reduce prices and sweep away their profits. Many cattle have been sold here the past month, at their cost in Chicago. The shipment of 610 head to England, has not mended matters, although every relief of the pressure helps somewhat. This business continues, and the meat sells well and readily in the English markets, but the expenses are heavy, and it is doubtful if the profit in it does not wholly exist in the assistance that this outlet gives to maintain the tone of a drooping market. As we close the market is still lower, the bottom still being out of sight. A good many poor cattle on sale, reduced the average greatly, many Texans selling at 7@7½c. on estimates of 54 ℔s. to the cwt. Natives estimated at 56 ℔s. to the cwt., sold for 8¾@9¾c. for the best. Of extra nothing of any account brought over 10½c.

Cows.—The demand for cows has been light through the month, and many cows have been unsold. The majority of sales have been made between $50 and $75 per head....**Calves.**—A glance at the heavy average receipts, will show a good reason for the dull trade in this market. With warm weather so many veals could not be worked off, and at one time 6c. ℔ ℔. was the highest price procurable for the best quality. The market closes dull, with sales of grassers at 3c. ℔ ℔., live weight, thin milk veals at 5@5½c., and choice at 6½c., a few extra only sold a little higher....**Sheep and Lambs** have been in heavy supply, and have sold slowly. Poor sheep are selling at 4@5c. ℔ ℔., live weight, and 5½@6c. for good. Lambs are selling at 6½@8½c. for Virginian and Kentucky, and 8½@12c. for Jerseys....**Swine.**—The values of hogs has declined steadily until the close, when prices recovered, sales have been made as low as 7½c. for dressed, but closing prices may be quoted at 8@8½c. Live hogs from Ohio sold on the 10th inst, at 6¾c. ℔ ℔., for 207 ℔s. average. The Chicago Live Stock Reporter thinks that at present prices farmers have still a good margin for profits from their hogs, which can be advantageously fed for market at the current rates.

Prices of Feed.

Bran, per ton	$18.00@ $20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	41.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per ℔	3@ 4

Prices of Fertilizers.

No. 1, Peruv. Guano (10 p. ct. ammonia), ℔ ton	$54.00@ $55.50
" " (Rectified), per ton	61.50
Mapes' Nitrogenized Superphosphate, per ton	45.00@ 50.00
" Plain Superphosphate (mineral), per ton	30.00@ 35.00
" Bone Superphosphate, per ton	40.00@ 45.00
" Prepared Fish Guano, per ton	35.00@ 40.00
Fish Guano (crude in barrels), per ton	24.00
Bone Black, per ton	25.00@ 28.00
Bone Flour, per ton	40.00@ 45.00
Rawbones Ground (pure), per ton	33.00@ 40.00
Rough Bones, per ton	22.00@ 25.00
German Potash Salts, (25@35 per cent), per ton	20.00@ 25.00
Gypsum, Nova Scotia, ground, per ton	8.00@ 9.00
" In barrels, per bbl	1.25
Wood Ashes, per bushel	16 c.@18 c.
Nitrate of Potash (95 per cent.), per lb	8½c.@ 9 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2¾c.@ 3½c.
Nitrate of Soda, per lb	4 c.@ 4½c.
Sulphate of Ammonia (25 per cent.), per lb	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia	$3.00@ $ 4.00

An Injurious Parasite of the Horse.—As closer and more minute investigations are made, many hitherto unknown causes of disease are discovered. The old but not yet altogether exploded idea that "weakness and disease breeds parasites," is being shown more clearly than ever before to be unfounded, while, on the contrary, the fact is being more clearly proved, that it is to the presence of parasites, either vegetable or animal, that a large number of the diseases of animals are due. A dangerous parasite of the horse was recently described at a meeting of the Agricultural Club of Berlin, and carefully examined at the Veterinary College of that city. It is known as *Strongylus armatus*. It is one of the numerous species known as thread-worms, and inhabits the anterior mesenteric artery, during its earlier life, and afterwards the colon, or great gut. Its presence in the artery produces irritation and swellings, or aneurism, in which clots of coagulated blood are gathered that sometimes stop the circulation. The creature breeds in the colon, and its presence in either part causes a very severe colic, which is always fatal.

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

Our National BAZAAR this month, contains the usual assortment of good things, advertised by trustworthy men. It will always pay any one to look all through the advertisements, and see what is offered, by whom, at what price, etc. Many a man has got a valuable new idea from seeing what others say about business matters, which has started his own thought in a profitable direction. When writing to any of our advertisers, for information, catalogues, etc., or sending orders to them, please let them know that you belong to the great *Agriculturist* family, and you may expect and will receive good treatment. Our advertisers know that we carefully exclude any one who does not promptly perform what he promises in his advertisement.

A Double Calla.—We have several times seen the Calla (*Richardia Æthiopica*), try to produce a double spathe, as the white snowy leaf which passes for the flower is called; but in these cases an imperfect spathe grew at some distance below the perfect one. Recently Wm. Barkham, gardener to Jos. Jefferson, Esq., Hohokus, N. J., sent us a specimen in which the spathe was handsomely and completely doubled, two being directly opposite, and both alike perfect.

Pear Blight.—"C. M. C." So far as we are aware, the blight only manifests its presence by the death of a branch, or the whole tree, showing that the mischief is already done. Whatever may be the cause of the blight, we do not yet know how to detect its early stages, or to prevent its attacks. All that can be done is to cut and burn whatever part of the tree may be blighted.

Soldering at Home.—If one of a family is sufficiently a tinker to be able to solder, it will often save a great deal of annoyance, especially in the country, where often one must send many miles to a tinsmith to stop a trifling leak. Almost any one can learn to do ordinary mending, especially if they can watch a tinsmith at work for a few minutes. But in order to do such jobs, one must have a soldering iron, (probably so called because made of *copper*), and solder. These were formerly difficult to procure by those far from cities, but now they may be had—of all things in the world—by mail! Mr. J. W. Baker, of Philadelphia, sends a soldering iron, (copper), a stick of solder, a box of resin, and directions, all by mail for $1. How, after paying the postage, he can make anything on the trade, is not our business to find out—but he does it.

The Pictures on the Cover.—We are aware that our readers note with pleasure the monthly changes of fine engravings upon the cover of this Journal, but we call especial attention to the illustrations of this number. The corner pictures are carefully executed, reduced copies of familiar representations of "revolutionary scenes." The beautiful center picture of "1776," which is the work of one of our best artists and engravers, tells its own story. The American Eagle looks proudly out on a battle scene, upon which the sun is rising, as an emblem of that peace which should follow the struggle—a peace over which we, as a nation, are now, in this Centennial year, rejoicing.

Trow's New York Directory.—The directory of an immense city, like New York, is a work requiring great labor, and a large and well systematized force. Mr. Trow, who has just issued the 90th Annual Directory, has shown his usual promptness. As an instance of rapid work, we may state that the sheets of the volume now before us, of 1,500 pages, went into the bindery at 8 o'clock in the morning, and at 5 o'clock the same day the completed volume was at our office for delivery.

Fruit-Jars.—Several housekeeping friends have asked which is the best fruit preserving jar, and as an answer was crowded out of their proper columns, we reply here. We can not say which is the best jar, as we have not tried them all, but we have of late years used the "Cohansey," which has for some time been advertised in our columns. It is easily closed and opened, and so far as our experience goes, keeps the fruit in perfect condition. Our trouble heretofore has been that when we found a satisfactory jar, and wished to purchase the same another year, we found that it was not made any longer. We believe that the Cohansey is a permanent manufacture, and can always be obtained.

Rolling Chairs at the Centennial.—Those visitors to the Centennial Exhibition, who are unable from weakness or other cause, to endure the fatigue of walking through the immense buildings, find great relief in the use of the rolling chairs, which can be hired for a moderate sum, with or without a "motive power," in the shape of an able-bodied man. We were not aware until recently, that the rolling chairs, so often referred to by the correspondents of the daily papers, were the same as those which have been so long advertised in our columns by S. A. Smith, Manufacturer, No. 32 Platt St., N. Y. We several years ago examined his stock, and found a fine assortment of self-propelling and other chairs, for the benefit of invalids and cripples.

The Death of Edward J. Carpenter.—Agriculture and horticulture in Westchester Co., N. Y., have met with great loss in the sudden death of Mr. Edward J. Carpenter, who died after an illness of a few days, on May 10th, at his residence not far from Chappaqua. Mr. C. was formerly a nurseryman, and possessed a wide and accurate knowledge of horticultural matters, and was one of the most efficient members of the County Agricultural Society. He was an intimate friend of Horace Greeley, the two being neighbors, and generally known and esteemed throughout the County.

The Buckwheat Crop.—Buckwheat is the latest grain crop of the season, and is sown in the Northern States early in July. It is raised habitually on some farms with soil particularly favorable to its production, but on most farms it is only occasionally sown as a cleansing crop in foul or rough land, or to fill some place made vacant by the failure of other crops. Its straw has no appreciable value for fodder. The grain is chiefly used among farmers in the feeding of poultry, and the flour for the generally admired buckwheat cakes. It is an excellent cleansing crop, especially if the ground has laid fallow during the first part of the season, and had one or two crops of weeds turned in as a fertilizer. It grows so rapidly in the midsummer heat that all other vegetation upon the soil is smothered. It is sown frequently upon old brush pastures after thorough plowing and harrowing, and is a good disintegrator of the rough clods. It is used to some extent as a green manure to be turned in for rye early in September. We have seen rather light sandy soils, deficient in vegetable matter,

treated in this way for a succession of years, with excellent results, and a steady increase in the rye crop. The land yielded each year a green manure crop of buckwheat and a crop of rye. Though so generally cultivated without manure, it is much more profitable to apply a light dressing of some good concentrated fertilizer. One hundred pounds of Peruvian guano to the acre, or twice that quantity of a reliable superphosphate, or of fish scrap, will greatly increase the yield of Buckwheat, and add to the profit of cultivation. In growing the crop as a green manure for poor land, it is especially important to use some kind of manure to give it a start. When the crop is raised for grain, the cutting is done with the cradle or horse-reaper, and raked up the next morning before the dew is off from it. No binding is needed for the bunches, which are set up on end, cured a few days in the sun, and sent from the field to the thrashing floor or thrashing machine. The grain is eagerly eaten by poultry, and for a variety is one of the best for laying fowls. It also makes an acceptable variety for horses when ground with corn and oats, or corn and rye, and fed moderately. It is too "heating" for swine; the bran given to cows in slop helps to increase the milk, but makes the butter white. The quantity of seed per acre is 2 to 3 pecks.

Soiling of Cattle.—"F. G.," Adams, N. Y. The little book, entitled Quincy on Soiling Cattle, which is sold for $1.25, is a relation of the personal experience of the author, and is very valuable to those who propose to soil their cows. This book treats the whole subject in a thoroughly trustworthy manner.

Raising Hogs on Corn Alone.—"S. P.," Evergreen, La. It is doubtful if pork can be profitably produced by feeding corn continuously at a price of 75 cents a bushel. There are cases under which it may be done, but these are very rare. For instance, where there is a good market for light pigs of 80 to 100 pounds, and such pigs can be made ready for market at four or five months old, then there may be profit in it. Under the very best conditions a bushel of corn has been made to produce 15 pounds of pork, but we doubt if any farmer has reached such a result in his ordinary experience. When a pig can have a good run in a grass or clover field during the summer, and a pound of corn a day, he may be kept growing, and by the addition of skimmed or butter-milk, which would be a great help, the greater part of a season's growth could be gained at little cost. It is in this way, and by finishing on corn, sweet potatoes, or peas, that you could make the cheapest pork.

Grinding Bones.—"W. M. S.," Tompkins Co., N. Y. Bones cannot be ground in a hand mill; being very tough and hard, they require at least a two-horse power. The Bogardus mill is, so far as we know, the only one made for this work. If bones are reduced with sulphuric acid, they become very soft, and may be crushed with ease without a mill. We do not recommend inexperienced persons to use this acid, as it is dangerous to handle in the method needed to reduce bones.

The Best Part of the West for Farming.—"Subscriber," Altoona, Pa. It is a matter of convenience or taste as to which part of the West is the best for farming. For corn or wheat growing, or grazing, Nebraska offers great advantages, and the Platte Valley is probably the choicest part of this State. Land is there both rich and cheap.

The Sugar Grove Normal and Industrial School sends us a circular relating to a picnic, at which the graduating exercises are to be held, and prizes are to be given for some unusual contests, such as naming wild plants at sight, estimating the weight of horses, estimating distances, the best loaf of white-bread made by a boy, etc. There are 14 Sugar Groves in our latest Gazetteer, and our readers may "estimate" at which one these exercises were held, as there is nothing in the circular to indicate it. Singularly enough, a large share of the prize lists for fairs fail to give the State.

Mowing Strawberry Beds.—"F. H. A.," Youngstown, Ala. Some cultivators, who have practiced cutting away the old leaves from the strawberry plants, as soon as the fruit is off, think well of the method, but it has not been done upon a sufficiently extensive scale to enable us to say if it can be profitably adopted by all. In your climate, where it is desirable to give the soil all the shade possible, it would be well at first to experiment with a portion of the bed.

Rheumatism in a Horse.—"F. G.," Ottawa Co., Kansas. There is no such thing as chest-founder. The stiffness in the shoulders of your horse is doubtless rheumatism, as there is no desire in the animal to stand with his fore legs apart, and his breathing is regular and normal. Bloodroot, alum, resin, lard, and linseed oil could not be expected to give any beneficial result, as they are totally useless in such a case. We would wrap around the shoulders a coarse rug, and keep it saturated with cold water for a day and night. Afterwards rub the parts with a mixture of equal parts of olive oil and chloroform once a day, with considerable friction with the hand. Then give 25 drops of tincture of aconite root, every four hours until six doses are taken. Pour the tincture upon some sugar, and place it on the back of the tongue, when it will be readily swallowed. Half-ounce doses of sulphite of soda may be given every day in the feed, for a week or two, or until the horse recovers.

Root Slicers.—"S.," Saybrook, Ohio. A cheap home-made root-slicer is described and illustrated in the *American Agriculturist* of January, 1872, and root-pulpers in April, 1872, and June, 1874.

Dipping Sheep.—"Dr. ——," Spartansburg, S. C., sends the following recipe for a dip for sheep, which is used by one of the largest wool growers in south western Texas, with entire success. He says: "Steep 25 lbs. of tobacco in 100 gallons of boiling water, add 12 lbs. of flowers of sulphur, a pound and a half of arsenic, and two boxes of concentrated lye. Continue the steeping process until the leaf of the tobacco parts from the stem. Dip the sheep in this liquid while it is luke-warm." The effect of the dip is to free the sheep from all sorts of external parasites and parasitical skin diseases, and also to cleanse the skin and encourage a healthy growth of wool. In using arsenic in a sheep dip, care should be taken not to wet the hands any more than can be helped, and no one should work with it who has cracks, scratches, or sores, upon his hands. With proper caution it is safe, but its poisonous nature should be known and kept in mind.

Potash Salts.—"E. D. C.," Poolesville, Mo. The quantity of potash contained in the various salts of this alkali used for fertilizers, when pure, is as follows: muriate of potash contains 50 per cent; sulphate of potash 30 to 40 per cent; Kainit 12 to 15 per cent, and nitrate of potash 42 to 44 per cent. The only soda salt of value as a fertilizer, is nitrate of soda, which contains more nitric acid than the potash salts, being equal to 19 per cent of ammonia.

Value of the Refuse of Blacksmith Shops.—"J. H. J.," Lindale, Ohio. The sweepings of blacksmith shops are valuable as a fertilizer. The hoof-parings are especially rich in nitrogen, the droppings from the horses are of course valuable, and the fragments of iron contained in the refuse, are not at all injurious, but on the contrary, may be in some cases of considerable service. The refuse should by no means be allowed to go to waste.

Market for Angora Goat's Wool.—"F. E. W.," Ellettsville, Ind. We believe the Jamestown (N. Y.) Mohair Manufacturing Company, are purchasers of mohair. The use of this wool in the United States is increasing, and as soon as a sufficient quantity is produced, there will probably be abundant use for it.

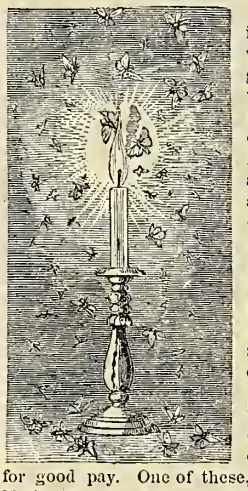
Roup in Fowls.—"T. J.," Kensico, N. Y. When fowls have a discharge from the mouth, eyes, or nostrils, the head swells, and the eye or eyes become closed, the trouble is known as roup. The proper remedy is to wash the mouth and affected parts with a solution of half-a-dram of chlorate of potash in one ounce of water, and pour a tea-spoonful down the throat. Do this three times a day. Give for food corn-meal mush or curdled milk with a little salt and powdered copperas in it, made into pills and put down the throat. Damp and filth are the chief causes of this disease.

A Two-teated Cow.—"G. B.," Cumberland Center, Me. It is probable that a two-teated cow, more especially as she came from a dam similarly defective, will produce calves which are malformed in the same manner. But she may not, and if she is otherwise a good cow, we would not sacrifice her for this fault alone, unless her calves are found to possess her defect.

Mice and Trees.—"R. T. H.," Prince Edward's Island. You do not state whether the injury to your fruit and ornamental trees and hedge was done during the past winter or not, but it is most likely that it was done at that season, as they at other times find food in abundance. They rarely attack trees where the ground is clear of rubbish from dead weeds, and other litter under which they find shelter. They often work under the snow. The chief means of prevention are to make a conical mound of earth 12 or 18 inches high around the trunk in the fall, and level it in the spring. After each fall of snow, let the snow be trampled down so hard that the mice can not work through it. The mice may be caught in holes a spade deep, with the bottom some inches wider than the top, and the sides inclining inwards from the bottom. Owls and snakes are their natural enemies, and should not be needlessly killed, and cats may be encouraged, though objectionable when they destroy birds. Arsenic, mixed with meal, and made into a hard dough, may be used to poison them, if placed where useful animals can not get at it. Girdled trees may be saved by inserting several grafts, the upper end above and the other below the wound.

Tanner's Refuse.—At the Annual Convention of The Tanner's Association of Pennsylvania, which recently met at Philadelphia, one of the speakers referred to the value of tanner's waste as a fertilizer. There is much refuse about a tannery which, while worthless otherwise, is of great value as a fertilizer, when properly saved and used. These are the fleshings, hair, spent tan-bark, ashes, and the sediment from the lime-vats and beam-houses. When properly saved, all these matters may be made to realize to the tanner, a sum equal to one cent a pound upon the whole product of leather, and at this rate it is a cheap fertilizer to the farmer. It contains lime, nitrogen, potash, and phosphoric acid, with other less important matters. Having used much of this waste, we have found that the best way to manage it is to compost the whole together, along with some barn-yard manure, which excites the necessary fermentation for its decomposition.

Sundry Humbugs.



Early in the present year it was remarked that it would be strange, if the ingenuity and enterprise of those who get their living by humbug, should let the occasion of the Centennial Exhibition pass, without availing themselves of the advantages it offers. The Centennial has afforded an opportunity for that which is much worse than a humbug—a crime, and a crime so foul that we are at a loss for a suitable name to describe it. Long before the exhibition opened, advertisements appeared in various papers, published at a distance from Philadelphia, offering employment to girls for good pay. One of these, which appeared in a New York paper that is regarded by its friends as respectable, reads thus: "GIRLS! (Cut this out.) Go and see the great CENTENNIAL EXHIBITION at Philadelphia. PLENTY PLACES—GOOD WAGES. Call or address," etc. This is the very mildest form; in other cases circulars have been sent to girls in country towns, holding forth flattering inducements of good pay, and advising the recipient of the circular, not to let their parents know of their intention to go. So far as any employment for girls at the Exhibition goes, there is no doubt that Philadelphia can supply all the help wanted for ten such exhibitions, and there is not the slightest need to call in any from abroad. Every one who knows the ways of the world, knows just what such circulars and such advertisements mean, and it is not necessary for us to defile our columns by any plainer speaking. We are only surprised that any paper could publish such an advertisement, but we are not at all surprised at the letters expressing indignation that we receive from various parts of the country. It may be that there are thoughtless creatures, who, tempted by the offers of good pay, would conceal such a matter from their parents, but we trust that no girl who reads the *American Agriculturist*, whatever her age, is so far on the road to "the bad," as to have any secret from her mother.

THE VARIOUS LOTTERIES

still present their schemes, and still letters come, asking if this one or that is not "honest." "Constant Readers" or "Subscribers" can have read their paper to very little purpose, if they are not aware of our views regarding *all* lotteries. Holding, as we do, that they are wrong in principle, that their tendency, no matter how fairly conducted, is to teach persons that they may somehow get money without working for it, or giving some equivalent. We know of no lottery that we can recommend, no matter whose name is connected with it, while some are frauds of the meanest kind from the start. Some of our correspondents complain that the

TOPEKA, KANSAS, LOTTERY

is flooding the country with its circulars. We do not know if these could be excluded from the mails, under the law against using the mails to defraud the public, and perhaps the fact that some few—we are happy to say very

few—States, still give legislative sanction to lotteries, may prevent the exclusion of their circulars from the post-office. Our friends, who write to us to "expose it," can learn in what esteem this Kansas affair is held at home, by referring to the Humbugs in the June number, where we give a quotation from the Kansas Farmer, published at Topeka, the headquarters of the concern.

TELEGRAPH SCHOOLS AND COLLEGES.

Complaints are still made of concerns that profess to teach telegraphy and insure situations to those who are taught; two of these are in Ohio. We wrote to a friend living in the town where one of these schools is situated, and learn that this particular one, against which charges are made, is regarded as a highly respectable establishment, conducted by well known citizens. We have on the one hand a charge of swindling from a person we do not know, offset by testimony as to general good character from a person we do know. From the complaints that come to us, we have no doubt that some of these telegraph schools have promised more than they can perform, and that there has been great dissatisfaction among those who have attended them. It is not our custom to act upon unsubstantiated charges, and those who think they have been defrauded, must furnish us with positive and substantiated evidence, before we can comply with the request to expose the alleged telegraph or any other alleged "swindle;" merely referring us to "victims" in different parts of the country will not answer... We thought that the Brazilian Perfume Stone was a very clever catch, but now we have

"THE WONDERFUL PERFUMED SHELLS."

It was some comfort to know that the Perfume Stone came from "a cave in a secluded ravine at the foot of the Andes Mountains, in Southern Brazil." And moreover there was a picture of the "cave" that should convince the most skeptical. The "shells of ocean" circular has a picture of "the island," there are rocky cliffs, a beach with the shells lying about loose, of course there is a sea, and the full moon struggling among the clouds, gives an effect that is "grand, gloomy, and peculiar." But alas there is not the least hint as to the locality of this remarkable island, though any one who had ever seen the picture would know it should he ever get shipwrecked upon it. The shells we are told are "petrified," which is a rather queer thing for shells lying around on a beach to be. So remarkable are these perfumed shells, that "no lady's toilet is complete without them," but still more remarkable is the fact that one by selling them may "start a fortune with $5." The directions for doing this are very plain, but we notice that it mainly consists in sending money to the seller of the shells.... They have

A CANCER SCARE IN OMAHA,

according to the papers, but the people need not be afraid, as they have a "Cancer Doctor" equal to the occasion. This doctor has made a discovery that "the air is full of cancer," and all old women with any kind of swelling, and every nervous man with a pimple, are frightened into the belief that they have a cancer, and as a consequence, the "doctor" is full of business. This kind of excitement is started every now and then in various localities. We do not believe in mob-law, but in those far western towns it is the custom to tell an obnoxious person to "git up and git," and this summary notice to leave, if ever justifiable, would be so in the case of this "cancer doctor," who is scaring all the nervous people into fidgets. The well known fatal character of cancer, and the ease with which the imagination of persons afflicted with some obscure swelling or tumor is wrought upon, gives these cancer doctors a grand chance. They easily persuade the patient that he or she has a cancer, and promise a cure, which, the trouble not being a cancer at all, is easily effected, and the quack is paid liberally for his supposed wonderful cure. There are few maladies so rare as a cancer, and few so absolutely incurable. No one should submit to treatment for a cancer without first having its existence established by the highest surgical authority. Cancer quacks are bad enough, and fraudulent lotteries are bad enough, but to have them both presented on one sheet is a

CONCENTRATION OF EVILS.

Here we have a thing that calls itself a "Medical Journal," which is in part occupied by the advertisement of a "Cancer Compound," and in part by one of that Wyoming Lottery, the special beauties of which we in part explained last month.—"Oh how happy could we be with either, were the other dear charmer away."....Here comes the question

ALL THE WAY FROM WYOMING TERRITORY.

"Has this nuisance ever been shown up?"—Now what does the attentive reader of the Humbug column suppose is thus called a "nuisance"?—Nothing less than the "True Narrative" of our particular Edwin Eastman. There is the portrait of our beloved Eddie, and there is his signature just as he has written it for us at our own desk, and yet this man in Wyoming calls him a "nuisance!" But then it is one "Clark Johnson, M. D.," who sends out the circulars, and perhaps it is he who is the nuisance after all. This whole matter of Edwin Eastman and "Clark Johnson, M. D.," was explained long ago, and is among the antiquated subjects.

A POSTMASTER ASKS ADVICE.

A postmaster in Illinois, asks what we would do if we were P. M., and received such a "slip as the enclosed." The slip is a note from "Clark Johnson, M. D.," stating that letters addressed to "so and so" are returned unclaimed, wants to know the whereabouts of "so and so," and also the name of a reliable Justice of the Peace in the vicinity. Mr. "Clark Johnson, M. D.," must have a great many delinquent correspondents, as he has a lithographed circular to Post-masters, into which the name of the person inquired for is written with ink. As to what we should do were we Post-master, we should do nothing. We cannot see what an officer of the United States Government has to do with hunting up the delinquent agents of any dealer in quack medicines. Let Clark J. slide and look after his own stuff.

New Strawberries from Pennsylvania.—Mr. A. Miller, of Carlisle, Pa., sends us specimens—fruiting plants—of four of his new strawberries, viz: "Cumberland Triumph," "Springdale," "Kohocken," and "Golden Defiance." The plants were very strong, and evidently great bearers, the fruit in the first three very large—that of the Cumberland Triumph especially so—and in all well formed. We could not properly judge of the quality, as they were packed in damp moss, which imparted its own musty flavor to the berries. To judge from these specimens, we should say that these varieties are of good promise, and worthy the attention of those interested in strawberry culture.

The New Jersey State Horticultural Society send the Report of their first annual meeting. It contains several papers by well-known cultivators of fruits and flowers, and is of interest to horticulturists generally. We have marked the interesting paper on the Huckleberry, by Mr. C. W. Idell, for insertion in our columns when we can find room.

The Horticultural Exhibition of the New York Horticultural Association, opens just as we go to press. Gilmore's Garden, (formerly the Hippodrome), is converted into a scene of great beauty and interest. We cannot now specify the leading exhibitors, but hope to do so another time. The florists, nurserymen and others in and around New York, have taken hold of the matter with spirit, and have made the first exhibition of the Association a gratifying success. Several good judges consider that this display is finer than that at the Horticultural Hall at the Centennial.

The Polaris is the name of a small cooler made by A. M. Lesley, N. Y., whose large Zero refrigerators are favorably known and widely used. The Polaris serves to keep butter, milk, etc., apart from the contents of a large ice-box, and to furnish a supply of ice-water. It is a very useful cooler in a sick room, and for a very small family would answer the purpose of a larger affair.

How much Earth can be Moved in a Day?—"W. M.," P. of Q., Canada. The amount of earth that can be moved by an average laborer in a day of ten hours, depends wholly upon the character of the material. Of sand or loose earth, that does not need to be loosened with the pick, a man may throw into a cart 25 cubic yards a day. If the soil has to be picked, but is free from stone or hard pan, 12 to 15 yards will be a fair day's work, and for hard pan which is difficult to be broken up, 4 to 5 yards. In railroad work, when the earth is shoveled into carts or wagons, a fair day's labor is 15 yards of soft loam or sand, including picking, or 10 yards of stiff clay. This includes loss of time in waiting for the carts to come in. If a laborer has to drive the cart a distance of 100 feet, as well as fill it, a fair day's work would be four-fifths of the above.

Horticulture at the Centennial.—The most important special exhibition thus far, has been the display of Rhododendrons, by Anthony Waterer, the celebrated nurseryman of Woking, England. The plants were finely arranged under a temporary structure, and proved a great attraction. We regret that no distinction was made between those kinds hardy in this country, and those that will not endure our climate. Many persons took down the names of the finer varieties, but if they undertake to cultivate these in the open ground, they will be sadly disappointed ...The special strawberry show was a melancholy failure. Being held so near the great strawberry producing localities, in Delaware and Maryland on one side, and of southern New Jersey on the other, we expected there would have been a grand show, but for some reason the growers did not respond.... Neither horticulture nor agriculture seem to be thought of sufficient importance by the Commissioners to be regarded as among the groups into which the exhibits are divided. We hope that later special horticultural exhibitions may result more creditably.

Sowing Cabbage-Seed in the Field.—"E. W. B.," Chappaqua, N. Y. Mr. Gregory, of Marblehead, advocates, or did at one time, sowing the seed where the cabbages are to stand. We should not like to disagree with one of so much experience and so generally accurate as Mr. G., had we not tried both ways. We are unable to see that anything is to be gained by this method, while the labor is greatly increased. In the ordinary way, sowing the seed in the seed-bed, all the care of the young plants is done upon a very small space, and the plants when a few inches high are set in recently plowed and prepared ground. Where the seeds are sown in place, you have to go over the field to sow, dropping 2 to 6 seeds in a place; then the whole field has to be kept clear of weeds from the beginning, and here some weeks of extra work is added. After this at least two thinnings must be made, and the working of the soil, while the plants are very minute, must be done with extra care. Another advantage in transplanting is, that each root may be inspected, and no imperfect ones set. While there may be something about Mr. Gregory's soil or climate that makes the plan better for him, we could see no advantage in it, and several disadvantages.

Mulching.—"S. W.," Ontario, N. Y., strictly speaking, a mulch is any substance which, put upon the soil, will mechanically prevent the evaporation of moisture, and as a secondary result, prevent the baking of the surface by the sun's heat. Manure is no better as a *mulch* than any other material; but if the object be to both fertilize and protect the surface, then, and only then, is it better. Newly planted trees do not need manuring the first year, and manure can be used to better purpose on established trees. Any litter that will not bring in weed seeds may be used. Near the coast we find salt hay the best. Old straw, bog-hay, and even cut corn-stalks, may be used. Tan-bark and saw-dust, or chips, will answer, and stones are as good as anything. In the absence of any other mulch, use earth—which means keep the surface light and open, working it often.

Trees from Cuttings or Seeds.—"S.," Richmond, Va., asks us to give a short dissertation on trees grown from cuttings as compared with the same kind grown from seeds. Some trees are just as well grown one way as the other, while other kinds never make handsomely shaped trees from cuttings; the cutting being from a side branch, will always be one-sided. Our correspondent has some pear trees he has grown from cuttings, and his question has reference to these, he says they are fine and healthy now, and wishes to know if they will last. If they form sufficient roots to allow a "fine and healthy" growth, there is no reason why they should not last as well as the same variety raised in any other manner. A great many pear trees are practically from cuttings; trees on quince roots are planted deep, the pear takes root, while the quince root dies, leaving the pear on its own roots. Pear trees are not raised from cuttings, for the reason that, as with apples, but few varieties will take root readily. In climates where the winter is mild, but still cool enough to prevent leaf growth, even peach cuttings will take root.

Basket Items continued on page 273.

The White-headed or Bald Eagle.

Upon the first page is given an engraving of the Eagle as it is, surrounded by some of the many forms in which it is represented as our national emblem. The Bald Eagle (*Haliætus leucocephalus*), is one of our largest birds; its extent of wing is seven feet, with a length of about three feet. Its general color is of a deep amber brown, in marked contrast with which is its white head, neck, and tail. Its strong bill and talons, with great strength to use them, make it a formidable enemy to other birds, and enable it to carry off not only wild prey, but it has been known to capture lambs, young pigs, and poultry. The bird has its unpleasant aspects, and is seen to great disadvantage in confinement. There can hardly be a more forlorn object than the "bird of freedom" in captivity and held by the bars of a cage. It is seen at its best in flight, and when soaring at a great hight, the ease and grace of its movements, sailing in broad sweeps without an apparent motion of its wings, make it a truly noble bird. Its lightning like descents when from

a great hight it discovers its prey, are truly wonderful. This eagle is found in nearly all parts of the country, and is supposed to live to a great age; it builds a rude nest of sticks, turf, moss, and other materials, five or six feet in diameter, at the top of a tall tree, and occupies it year after year, raising two to four young. Among the good qualities of the bird is its close attachment to its mate, the two being never found far apart, and their relations are supposed to continue until one or the other dies or is killed. On the other hand, it is a very tyrant among weaker birds, and gets a large share of its living by watching the more industrious Osprey or Fish-hawk, and robbing it of its prey. The use of some eagle as an emblem, dates from the days of ancient Rome, and it is used in a monstrous double-headed form by Austria and other European countries. Some have regretted the adoption of the Bald-headed Eagle as our national emblem, as it is not in its private character altogether lovely. Still it is quite as noble among birds as is the lion among beasts, adopted by the mother country, and is much more real than that remarkable unicorn, also represented as "fighting for the crown" upon the seal of Great Britain. No one who has seen the Bald-headed Eagle in its flight, can regret that it was chosen as the Emblem of Freedom—as for the rest, we know that even human heroes have their weaknesses. It would be interesting to bring together all the various forms in which the imagination of artists has pictured our eagle. The engraving on the first page gives but a small part of those in which the bird has been represented upon coins, seals, banners, and elsewhere. The spread eagle, the eagle with the olive branch and thunderbolts, the bird guarding a shield, or grasping a cannon, the eagle standing on the lookout for things in general, or even in a hurried flight for some place in particular, are some of the forms in which this bird has been represented. It is proper here to enter our protest against the wanton shooting of the eagle wherever it may appear, and express our sincere hope that the *American Agriculturist* for July, 1976, may not be obliged to mention it as an extinct bird, either in reality or as an emblem of freedom.

The Potato "Bug" Once More.

A gentleman visited our office some weeks ago in a "state of mind;" his crop of potatoes was being destroyed by the "Bug," and the *American Agriculturist* had said nothing about it. Letters come asking what to do for the "potato bug," and even now samples of the insects are sent, asking what they are. We have once before suggested in a jocular manner, that the only way to suit some persons would be to print the paper with the same contents month after month, as very few appear to remember what they read. Now that the "potato bug" has made its way to the far East, those who dwell there look upon the matter as something entirely new, forgetting that we have for the past ten years chronicled the eastward progress of the insect, and warned them to expect it. While we felt that we had fully discharged our duty to our readers, in relation to this insect, we had the curiosity to look back through the volumes to see just what had been done. We find that in August, 1865, the year when the insect crossed the Mississippi, we figured and described the perfect insect and its larva, and gave the remedies then known. From that year to the present, we find that we have averaged three articles and notes a year, and in 1875, when it first became serious in the Eastern States, there were no less than eleven articles, long and short, several of them with engravings describing the insect anew, giving the various appliances for its destruction, and recording its progress from place to place. In view of all this, we can only be amused when we are told that we have neglected the "potato bug." The above enumeration does not include the frequent references to the insect in the "Hints About Work," which are always as carefully considered, and are as new and fresh as any other articles. This year, warnings have been given in these Hints, and in June, p. 207, there are concise directions for killing the "bug," by the use of Paris green. Considering the fact that we have many readers who have not kept the run of the subject, and that it is one of great importance to every farmer, and nearly every one who has a garden, we are warranted in giving once more an

ABRIDGED HISTORY OF THE POTATO BUG.

We would remark that those who have access to the valuable reports of Prof. Riley, the State Entomologist of Missouri, will find running through them the most detailed and complete history of the insect in all its relations anywhere to be found. Having investigated the insect from its first appearance as an enemy to agriculture, and kept track of it to the Atlantic Coast, he has accumulated a great amount of information which we hope may some time be consolidated in a single treatise.

WHAT IS THE INSECT?

Though generally called the "Potato Bug," it is not a "bug" at all, except to those who call all insects bugs. The name should be restricted to the insects of the order of which the Bed, Chinch, and Squash bugs are examples. The Potato "bug" is a beetle, and its correct common name is the "Colorado Potato Beetle," but the term "Potato Bug" is so much easier to speak, and so well established, that there is no hope of a change in this respect. Entomologists call it *Doryphora decemlineata*, which may be translated as "The Ten-lined Spearman." Like other insects, it has its four stages, (1), the egg; (2), the larva or grub; (3), the pupa or chrysalis; (4), the perfect insect.

WHAT DO THESE LOOK LIKE?

To answer this we give an engraving which we have before used, but which answers the purpose as well as a new one would, it being quite accurate. (1). The eggs (*a*), are oval, of a dark orange color, and are deposited upon the under-side of the leaf in patches of 10 to 40, a single female laying from 500 to 700 eggs; these hatch out in a week or less, and produce (2). The grubs or larvæ. These are at first very small (*b*), of a reddish color, eat voraciously, and grow rapidly, becoming light orange, with a double row of black spots along their sides as they mature, when they are fat and disgusting in appearance, (*c*). It takes the grubs two or three weeks to mature, when they drop from the vines, and go into the earth, where they form a little cavity and enter (3), the pupa state, in which they remain quiet for 10 or 12 days, and at length come out as the perfect insect, which makes its way to the surface, and has the appearance of *d*, *d*, in the

Fig. 1.—THE POTATO BUG IN DIFFERENT STAGES. *a*, eggs; *b*, young grubs; *c*, mature grubs; *d*, perfect insects.

engraving, which gives a side and back view. The insects are then ready to provide for another brood, and they lose no time in doing it. The perfect insect is of the size and shape shown in the engraving, and has the general appearance of a large "Lady-bird," with stripes instead of spots. It is distinguished by the 10 *distinct* black lines upon a yellowish or buff ground, and there is no other insect feeding upon the potato that is likely to be confounded with it.

ITS HABITS.

The first insects which appear in the spring come out of the ground, they lay eggs, and a crop of grubs soon hatch out. Hence the importance of attacking them on their *very first* appearance. There are three broods, the last of which enters the ground in October, and remains there in the beetle state, usually not more than 20 inches below the surface. Unlike some insects, it is very destructive in the beetle or perfect state, and is not only injurious as a breeder, but as a feeder. The perfect insects, especially those of the later broods, fly in the middle of the day, and one indifferent cultivator, as we know from unpleasant experience, will keep a whole neighborhood stocked with them.

WHERE DID IT COME FROM?

It was first discovered in the canyons of the Colorado mountains, where it fed upon several species of *solanum*, natives of that region, and was known to entomologists long before it became a pest to the farmer. Until potatoes were planted in the far west, it had nothing to subsist upon in a journey eastward, but when the country became settled, the insect rapidly increased with the abundance of food; it was first noticed as injurious to the crops about 1859, and since then has progressed eastward and into Canada with accelerated rapidity.

WHAT DOES IT FEED UPON?

Mostly upon potato plants (*Solanum tuberosum*), because there are the most of them, but it is equally fond of all of the solanum family; it attacks tomatoes, and especially egg plants, of which it seems to be more fond than of anything else. Ornamental solanums, or other plants of the family are attacked by it. It seems, since it has come eastward, to have acquired a taste for other plants, not at all related to the solanum family; pig weeds, mullein, thistles, and smart weed among wild plants, and the cabbage among those in occasionally cultivation, are plants it has been known to attack.

WHEN WILL IT DISAPPEAR?

So far as experience has shown, the insect on its progress eastward does not move on, but some remain, and while they do not seem so numerous after the first few years, potato growers apparently must accept the beetle as a fixed fact. It has kept a foot-hold wherever it has come, and there is no present indication that it will soon leave. It is in vain to hope that it will cure itself, but it demands the serious attention of all who cultivate the potato and related plants. To be sure there are

ITS NATURAL ENEMIES,

which we may hope, judging from other insect scourges, will increase sufficiently to keep it in subjection, but these slowly follow the pest. There are several of these, one a genuine parasite that deposits its eggs in the larva of the potato beetle, and several others that attack, kill, and feed upon the larvæ. Several larvæ of the lady-birds are very active in this respect, and should be encouraged, or at least not destroyed, as we have known to be the case. Figure 2 shows the general form of the larvæ of the lady-birds, the line giving the usual size; they move with great activity, and destroy numbers of the young grubs of the potato bug; these are usually lead-colored, with bright orange spots; these and the perfect lady-birds should be unmolested, as should their pupæ. The lady-bird larva enters the pupa state on the potato vine, attaching itself to a stem or leaf, it coils up and may be, by a careless observer, mistaken for a small potato bug grub, and destroyed. This is perfectly dormant and attached, while the other will move, and is readily picked off. Other insects in the perfect state, and as larvæ, aid in the work of destroying the larvæ of the potato bug. The only safe way is to watch every other insect found among them, and do not destroy it until it is found to be injurious to the potato plant.

Fig. 2.—LARVÆ OF LADY-BIRD.

HOW TO DESTROY THE POTATO BUG.

When the potatoes first appear above ground, begin the search for the bugs. The first that appear come out of the ground after their winter's rest. If these are captured at once, before they breed and lay eggs, it will materially diminish their future numbers. Much may be done by mechanical means when the insects are not in overwhelming numbers. Some have been very successful in simply knocking them off by means of a light paddle made of shingle, and catching them in a pan containing water. We have successfully used a

pan of sheet iron 30 inches long, with the other parts in the proportion shown in figure 3. The edges of the pan curve inward and make it difficult for the insects to crawl out. With this in one hand, and a light brush in the other, one can knock off the insects in large numbers very rapidly. The brush should be stiff enough to remove the larvæ and not

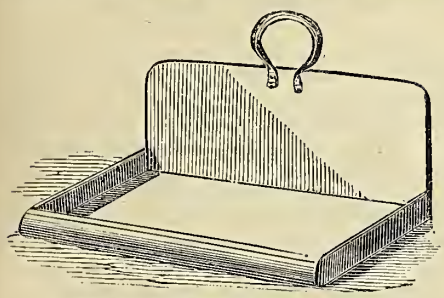


Fig. 3.—PAN FOR CATCHING BUGS.

injure the leaves; we find a wisp of straw, or a bunch of some strong growing grass, as handy as anything. There are patented contrivances for mechanically removing the bugs, but they promise no better results than these simple means.

SHALL WE USE POISONS?

If the means already suggested are insufficient, we say emphatically, *yes*. Use Paris green. We gave last month on page 207, very concise directions for the "Buying, Using, and Keeping" of the poison. Those who would read more on this article are referred to June of last year, p. 236, and August last, p. 294. "But it is dangerous."—Yes, and so are fire, gunpowder, razors, and several other things, *very dangerous* in the hands of children and stupid people. Knowing it to be deadly, treat it accordingly.

CAUTION AS TO OTHER POISONS.

Several potato-bug poisons are offered, the composition of which is kept secret. Some of these are white, others artificially colored. We doubt if these possess any superiority over Paris green. We have had complaints that some of these are entirely inert. Paris green is perfectly effective, we know exactly what it is, and how dangerous it is, and we feel safe in giving the advice not to give up a thing that we know, for some secret compound the composition of which we do not know.

Science Applied to Farming.—XIX.

BY PROF. W. O. ATWATER.

Feeding Plants.—Field Experiments with Fertilizers.—Wants of Different Soils.—Economy in Manuring.

An intelligent farmer visiting our Experiment Station, and examining some fertilizers we had analyzed, asked "which were the better fertilizers, phosphates or potash salts?" The reply was, and I knew no better one: "Potash salts where potash is needed, phosphates where phosphoric acid is needed, and nitrogenous manures where nitrogen is needed. Stable manure is a 'complete' fertilizer, it furnishes all that the plant needs for food, and improves the soil in other ways also. Now if you have not enough of this, and are going to buy commercial fertilizers, it is perfectly clear that you ought to select those which furnish what your land and crops most need. It will do little good to put potash salts on lands that contain an abundance of available potash, or phosphates where plenty of phosphoric acid and lime are at hand. And if nitrogen, and phosphoric acid, and potash, are all lacking, neither the phosphates nor the nitrogenous manures, nor the potash salts, will alone suffice. But it is certainly poor economy to either add fertilizing materials to a soil which furnishes them in abundance, or omit others for which crops are suffering. At the same time, if you do not know what your soil lacks, and feel that you must do all you can to make sure of a crop, and enrich your land at the same time, use your nitrogenous superphosphates, and German potash salts together. The former will furnish nitrogen, phosphoric acid, sulphuric acid, and lime; the latter, potash and magnesia. Thus you will have a fertilizer with all that the plant needs, a complete manure. At the same time it is well to remember that you may feed your crops, not only directly by giving them these ingredients in guano, phosphates, potash salts, and so on, but indirectly by rendering stores of plant-food, present in the soil or atmosphere, available through tillage and the use of cheaper fertilizers. A little lime or plaster may sometimes be thus more valuable than an amount of phosphates or potash salts that would cost several times as much."

Feeding Plants and Enriching Soils.

In a conversation between a number of our best Connecticut farmers a few days ago, one of them made a remark which seemed to me very much to the point. He said, "We farmers are just beginning to get into our heads the idea that we must *feed* our plants as we *feed* our animals. We have always had the notion that to get good crops we have simply to make our soil rich, and have not stopped to think how the manure helps the plant to grow. But we have got to learn that the use of fertilizers is to feed our plants, and that we must adapt them to the needs of our crops, just as we adapt the fodder to the wants of our stock. We have got to learn how to make the most of the plant-food that our soils may furnish of themselves, and to supply in manures what our soils lack."

The truth and force of these remarks, and particularly the variations in different soils as regards lack of plant-food is very finely illustrated in a comparison of the results of the

Field Experiments

of Messrs. Lawes and Gilbert in England with those performed by Prof. F. H. Storer, at the Bussey Institution, at Jamaica Plain, Boston, Mass.

As many readers know, the field experiments of Messrs. Lawes and Gilbert are by far the most elaborate that have ever been made. They have consisted in raising different crops with different manures, the same crop being grown on the same plot of land with the same manure year after year for a long series of years. In an experiment with barley, for instance, a field of about ten acres was divided into some 28 plots, which were treated with different kinds of fertilizers. The experiment was begun in 1852, and has continued until now, each individual plot receiving the same manure year after year. A similar experiment with wheat has been going on for over thirty years. Others have been tried with grass, clover, turnips, and so on. During all this time each crop of each experiment has been carefully gathered, and its amount and character noted. In a letter to the Treasurer of the Massachusetts Society for Promoting Agriculture, dated March 25, 1873,* Mr. Lawes gave a "summary which may be said to comprise the results of my experience and practice in regard to artificial manures for the last thirty years." In this he says that "the only two substances really required in artificial manures are: 1st. Nitrogen. 2nd. Phosphate of lime. . . . The best possible manure for all graminaceous crops—wheat, barley, maize, oats, sugar-cane, rice, pasture, grass—is a mixture of superphosphate of lime and nitrate of soda. 300 pounds of superphosphate of lime and 275 pounds of nitrate of soda, applied every year to one acre of ordinary English land, has for twenty consecutive years given a produce annually of six quarters (48 bushels), of barley. Fourteen tons of farmyard dung applied annually over the same period, has given the same produce of barley. . . . Potash is generally found in sufficient quantities in soils, and the artificial supply is not required." So much for the results of Messrs. Lawes and Gilbert's investigations. Now let us turn to

Prof. Storer's Experiments.

These were conducted on the same general plan as those of Lawes and Gilbert, though the details were different. The plots were smaller, about one rod square each, and they have continued only four years. The soil was light, dry, and of itself not very productive, while that of Lawes and Gilbert was moist and strong enough to yield without manure an average of 20 to 22 bushels of barley per acre for 20 years in succession. The motive of Prof. Storer's experiments was "to determine, if possible, what kinds of fertilizers, among those ordinarily obtainable in Boston, are best fitted to increase the yield of crops grown upon a field that had been chosen as a typical representative of the thin light 'leachy' soils which so frequently overlie the gravelly drift in New England." Three kinds of crops, barley, beans, and ruta-bagas, were grown. Over 280 plots in all were cultivated. Yard and stable manure, muck, fish-scraps, bone-meal, superphosphates, salts of ammonia, potash and soda, lime, ashes, and other fertilizers were used.

In general, the manures which contained considerable potash yielded the best crops, while phosphates and nitrogenous manures did but little good, and in some cases positive harm. The largest crops were obtained with dung and with wood ashes. Nitrate, sulphate, and carbonate of potash (pearl ash) likewise brought large returns. In a summary of comparative results, wood ashes proved more efficacious than any other single fertilizer, the yield being larger than with either yard or stable manure.

Prof. Storer concludes that the soil of his experiments needed potash rather than phosphoric acid or nitrogen. "The addition of potassic manures to the soil manifestly enables the crop to make use of a certain store of phosphoric acid and nitrogen which the land contains. It is clearly shown, moreover, that the amount of available potash in the soil must be very small, since neither the phosphatic nor the nitrogenous manures by themselves, nor mixtures of the two, such as several of the superphosphates are known to be, could enable the crops to get enough potash from the soil to keep them from starving after the first year."—And further: "It is plain that the soil of this field, like those of thousands in New England, needs fertilizers that are rich in potash, and that, under the existing condition of things, no advantage can be gained by applying mere phosphatic and nitrogenous fertilizers to the land. . . . If only potash enough be given to this soil, the latter can of itself supply all the other ingredients that compose the food of plants, at least for the term of years during which the experiments lasted, and for as many more, of course, as the store of phosphates and nitrogen may hold out. . . . The crying want of the land is for potash, and potassic manures should be applied to it to the well nigh exclusion of all other fertilizers until an equilibrium is reached."

Here are conclusions from experiments made in two different places and on two different kinds of soil. They agree in showing that the soils were able to furnish enough of all the ingredients of plant-food to yield small crops and enough of certain ones, to produce crops of considerable size, so long as the other ones which were lacking were supplied. But in Lawes and Gilbert's experiments, potash did but little good, while nitrogen and phosphoric acid were most efficient. The soil supplied enough potash provided the lacking nitrogen and phosphoric acid are added. In Storer's Experiments, on the other hand, potash was more needed than anything else, and the manures that contained potash were the only ones that did much of any good. Any readers who are interested in the details of these experiments, can find the original accounts of those of Lawes and Gilbert in the various volumes of the Journal of the Royal Agricultural Society of England, and of Prof. Storer's in the Bulletins of the Bussey Institution. Meanwhile allow me to point to a few

General Conclusions

to be drawn from the facts and experiments briefly referred to in this and preceding articles. Though the words are my own, the ideas are those not only of the men who have made the experiments, but of others who have, in various ways, on the farm and in the laboratory, made the study of these subjects their life work, and whose opinions are worthy of our most respectful consideration.

The wants of different soils, and of different crops as well, are very different. Economy in farming requires that these wants should be learned and

* Bulletin of the Bussey Institution. Part II, 1874.

then supplied in the cheapest and best manner. The wants of different soils can be learned only by experience and experiment. In brief, every farmer must study his own soil if he will get the best results from its cultivation. He must know, among other things, what plant-food his crops need, and approximately at least what and how much his soils supply. He must learn by what methods of tillage, culture, and manuring the natural supplies may best be utilized, and the deficiencies supplied. He must understand what different manures contain, that bone, and Peruvian guano, and fish, and most of our phosphates furnish nitrogen and phosphoric acid and lime; that the superphosphates contain sulphuric acid also; that the potash salts furnish potash, soda, magnesia, sulphuric acid, and so on, but that they all contain these ingredients in varying proportions and in forms such as to exert widely different effects on the soil. He must consider that these are all special manures, good where they are, and useless where they are not needed. Stable manure is a complete fertilizer and safe and useful everywhere. What artificial manures can be most profitably used to supplement this is best learned by observation and experiment.

I know a good many readers will say, "Your doctrine is all very good, but how are we going to study our soils and crops and manures? We have neither the time nor the means to make all these elaborate experiments, nor have we the scientific knowledge needed to make them successful. We cannot even tell whether a fertilizer we buy is genuine or not."—Well, that is all true. But observe where you can, buy books and papers and read them and use your influence to encourage others to study and experiment, and explain for you. Will it not pay better to do this than to give fifty dollars a ton for phosphates without knowing whether they are genuine, and run the risk of their not being what you want even if they are genuine?

Farm Experiments

with different fertilizers to test the needs of different soils, need not be so elaborate as the ones described above. Circular No. 4, of our Experiment Station, which treats of the Commercial Fertilizers sold in Connecticut, contains the following paragraph:

"For farmers who have not their own experience, or that of others in like circumstances, to guide them, the most sensible plan is to try experiments on a small scale, with different trustworthy fertilizers of high grade. The ones that prove most satisfactory, can then be used with confidence, in large quantities. Should the plan meet with sufficient encouragement, the Station will arrange with some of the manufacturers whose wares are sold under its supervision, to have small lots of high grade fertilizers of different kinds, put up in lots of fifty pounds or more each, and sold at low prices for experiments. Each lot of 'experimental fertilizers' will be accompanied with descriptions and directions for experiment, so that the user may, by proper care, with comparatively little expense, test the special wants of his own fields and crops."

Some experiments of this sort are already in operation. Dried blood, sulphate of ammonia, and nitrate of soda, are used to furnish nitrogen. A high-grade superphosphate for phosphoric acid; and high-grade German potash salts for potash. These are used both separately and mixed together, parallel experiments being made with them and with lime, plaster, and barn-yard dung. These experiments cost but little, but, if carried out with any fair degree of care, must prove very instructive.

Connecticut Agricultural Experiment Station, Wesleyan University, Middletown, Conn.

VALUE OF SMALL ROOTS.—Much injury has doubtless been done by the absurd offer of premiums at agricultural fairs for the largest sized pumpkins, potatoes, cabbages, and roots. Size is no test of excellence; on the contrary, fair sized, well grown, healthy vegetables and fruits are of better quality than the over-grown, monstrous ones, which have been fed and forced with liquid manure. For feeding animals, moderately sized roots are much more valuable than large ones, and a mangel or beet of 6 or 8 pounds is more nutritious in proportion to its size, than one of 20 pounds. In cultivating roots, the aim should be to encourage a thick growth of small roots, rather than a sparse growth of large ones. The crop in the aggregate may not be so heavy, but it will be worth more for feeding. The beet-sugar manufacturers instruct the farmers, who grow beets for them, to produce roots as near 2 pounds in weight, as possible, as these contain one-third or one-half more sugar than the large ones.

Ogden Farm Papers.—No. 77.

BY GEORGE E. WARING, JR.

The opinion has generally prevailed that the only marked economic value of the Jersey cow lay in her extra quantity and quality of butter product. She now appears on the stage in quite a new light—as a cheese maker. At Winthrop, Maine, a cheese factory, established two years ago, has been supplied from a region where a good strain of Jersey blood was introduced many years ago by Dr. Holmes, editor of the *Maine Farmer*, and where it has been appreciated and extended, until it is estimated that the cows supplying this factory average at least one-half Jersey blood. The cheese made is extremely rich in fat. Dr. Vœlcker gives analyses of various English cheeses, showing an average percentage of fat as follows:

Stilton	40.67	Double Gloucester	27.30
Yorkshire Stilton	30.00	Single Gloucester	28.64
Cheshire	30.92	Wiltshire	24.50
Cheddar	31.06	American	31.43

Cheese made at the Winthrop factory, and analysed at Cornell University, contained 39.24 of fat.

In 1875, near the end of September, cheese was made from the milk of thoroughbred Jerseys alone. One of these cheeses was sent to Prof. Arnold, who reports: "I have made one determination of the fat it contains, and found 40.2 per cent pure fat. Did not think I got it all. It is a very choice article. Since writing the above I have plugged the cheese again. It is certainly very fine. I meet with nothing better from any quarter whatever. It is as rich as Stilton, salvey and soluble, melting in the mouth, and has a fine, nutty flavor, with plenty of body."

The Jerseys are making their way with great rapidity, considering hard times, on the merit of their butter producing quality alone, and if they are to add to this advantage that of being the producers of a cheese, which will rival the richest of the epicure cheeses, those interested in breeding them are to be still farther congratulated.

During the past winter we have been using corn-meal for the first time as our principal reliance as an addition to hay. The hay was almost entirely of home production, and of much better quality (average) than we used several years ago. Only an average of two quarts of corn-meal per day was fed to each cow. Its effect on their condition seemed favorable, and on their product of butter decidedly good. The calves produced were strong, and up to this time the experiment seemed quite successful, but in a number of cases, where we had hitherto had some difficulty with the calves, owing to too great richness of the dam's milk, this difficulty has been increased, so that we have had more cases of "scours" than usual, and some of these have proved fatal. It is not safe to draw positive deductions from limited experiments, but we believe that in this regard, and this only, corn-meal has been a disadvantage to us. If we use this food again next winter, we shall withhold it entirely for a month before calving-time.

Referring to a communication concerning thoroughbred and grade Jerseys, on page 207 (June), I agree with what is there stated, except as to the question of constitutional vigor. I have kept, and I have known a very large number of thoroughbred and grade Jersey cattle, and I am satisfied that under ordinary treatment—that is, with some better shelter than the lee-side of a hay-stack in severe winter weather, and with a sufficiency of food—the thoroughbred Jersey is in all respects as hardy and healthy, and as easily reared and cared for, as the commonest scrub. Having a less luxuriant growth of hair, they do not, if starved, or if exposed to the bitterest weather, bear their trials so well, as shaggy native cattle, but under any treatment that a humane or judicious farmer would give to cows of any breed, the question of constitution may be left out of the consideration in adopting them for use.

The sanitary question is making its way as a popular topic with much rapidity. It is interesting to know that the inquiries made on the subject, come more and more from farmers, and those who live in isolated country houses—where the question of foul air from public sources is not to be considered. Inquirers of this class evince a great interest in the earth-closet question. The first consideration is, of course, of convenience and health—absence from exposure, and protection against foul air and poisoned well water. But the manure question is also much thought of. I have always been an advocate of the earth system, from the time of its first introduction, and see no reason to change my opinion concerning its value in the case not only of isolated houses, but quite as much for small towns and villages. At the same time it seems to be demonstrated that the inducements for its introduction must depend largely on the items of health and convenience, and less on the economic value of its product, than was at first supposed.

I have on several occasions in these papers questioned the policy of summer fallowing, for the reason that the free exposure of the organic matters contained in the soil to the action of the air condensed in its pores, (and frequently changed,) is subjected to an actual combustion (oxidation), and is practically destroyed and removed—by evaporation or filtration. Fecal matter, mixed with earth to be acted on by atmospheric air *is destroyed in the same manner*. The first effect of the oxidation is, of course, to develop its fertilizing activity, but there is no reason to suppose that the process stops at this point. It undoubtedly continues, until the products of decomposition are actually rendered so volatile, and so soluble, as to escape into the atmosphere, and become lost to the manure. Earth that has been used over and over again in this way, retains of course all, or nearly all, of the manurial ingredients of fæcal matter. But the nitrogenous parts—those to which fæcal matter owes its most active effect, when used as manure in its fresh state, are to a considerable degree practically lost.

It has been a favorite theory that, in the economy of nature, so valuable an ingredient as nitrogen must be retained by the soil it reaches until consumed by the crop, but unfortunately nature has her own way of managing her economies, and is much given to the rapid distribution of the elements of plant-food. Mr. J. B. Lawes, of Rothhampstead, finds as a result of his unequaled experience, that nitrogen is very fleeting in its character, being hard to hold after it has reached the condition in which it is ready for the uses of vegetation, saying that the nitrogen in nitrate of soda "is not only perfectly soluble, but is very rapidly washed into the subsoil, and beyond the reach of the roots of the plants. Boussingault made an analysis of the water of the Seine in the heart of Paris, and estimated that on that day 47 tons of ammonia, and over 182 tons of nitric acid were carried to the sea by that river alone." Everything indicates that nitrogenous manures, so far as they are to be considered as a stimulant to the growth of plants, must, to produce their full effect, be skillfully applied, in such a manner and at such a time as to strike the crop at the right moment, and in the right way, for their effect is so transitory, that unless their ammonia and nitric acid are used as they are produced, they are in constant danger of being wasted.

It must, therefore, not be supposed that night-soil mixed with and decomposed in the dry earth of the closet, will contribute to the crop to which it is eventually applied, anything like the full effect that is due to its original content of nitrogen. This element will be very largely wasted—not lost to the economy of nature, of course, but sent into the atmosphere to return to other fields as much as to our own. The phosphates and the alkalies will re-

main, and will give a decided value to the manure, but the leading arguments in favor of the use of the earth closet, are the very potent and important ones of health, decency, and comfort. The universal adoption of the dry earth system, would largely protect us against the *exhaustion* of our soils, but we must still regard it important to provide the stimulating elements of nitrogen in our artificial manuring.

Mr. James Ferrier, of Jeffersonville, Ind., sends me (for an opinion) a project for agricultural improvement, by the aid of loans from the public treasury. Briefly, his project is as follows:

Government to loan money on mortgage at, say, 2½ per cent per annum, for a term of years, to pay for under-draining, to be done under the supervision of competent government engineers. The money to be secured by mortgages on the drained lands.

His arguments are: 1. That this would give needed employment to laborers, tile-makers, rail-roads, engineers, etc. 2. That it would add at least 25 per cent to the product of much of the land now under cultivation, and would greatly increase the area of land fit for cultivation. 3. A large amount of produce would be raised for export. 4. The increased product would cheapen the cost of living, and enable us to compete, as manufacturers, with the rest of the world. 5. This would bring the balance of trade in our favor, and re-establish our finances. 6. The intrinsic value of a great proportion of our land would be permanently very much increased.

There is no question that *if this plan could be properly carried out*, the result would fully equal Mr. Ferrier's anticipations; but with a civil service the chief object of which is to furnish pecuniary reward to the friends of those in power, and with the certainty that instead of regarding their employments as a life long occupation, and an honorable profession, our officers are encouraged to look upon it as a means of getting out of their positions all the money that they can during the short time for which they remain in employment, the most probable result would be that this money would be swamped in a sea of corruption, or would be loaned to political adherents, would be badly secured, and would be expended under the direction of engineers—appointed because of their services to the party in power, rather than because of their skill and fitness—whose first object would too often be to make hay while the sun shines. Had we such a civil service as forms the foundation of the government of every other nation in Christendom, I should then be disposed to advocate in the most active way, just such a project as is here proposed, the more so because a similar loan of public capital, has done more than anything else to bring about the present superb condition of agriculture in England. Years ago the British government loaned money for agricultural improvements, at low interest, capital and interest to be paid off by regular annual instalments, reaching over twenty or thirty years, and secured only upon the *increased* value of the land beyond its assessment before the draining was begun. The very large sums applied in this way, were so soon taken up, and proved to be so safely invested, that private corporations of capitalists have now taken the business into their own hands—under the protection of a general law—loaning immense amounts every year, on all manner of agricultural improvements. With a decent civil service, the same result might be hoped for here, but under our present loose way of doing public business, there is great danger that money appropriated in this way, would only lead to a further development of corruption and dishonesty, and public loss and demoralization.

I had hoped by this time to have for the readers of these papers, some interesting material from Philadelphia—where my duties as a Judge of Awards, give me certain facilities for investigating the practical value of agricultural implements, systems of draining, etc., but the mass of material to be studied is so great, that I can at this writing only urge all who can possibly do so, to arrange to spend the most profitable week of their lives, in seeing for themselves what the industries of the whole world offer for their instruction. The Exhibition is beyond all precedent a most successful one, and I hope in my next to be able to give, with some detail, the reason why I think so.

Forest Tree Planting.

SIXTH ARTICLE.

During the months in which no planting can be done, our space may be profitably occupied in giving more detailed accounts of desirable trees, than we were able to do earlier in the season. The planter who wishes shelter, fuel, or fencing material, at the shortest possible time, will select very different trees from the one who wishes to turn his land to the best possible account, and plants as an investment, if not for himself, for his children. Among trees for the latter purpose, none stand more prominent than the

American White Ash,

an account of which was alluded to last month. The article here given is extracted from a valuable paper on Tree Planting, presented to the Massachusetts State Board of Agriculture, by one of its members, Prof. C. S. Sargent, Director of the Botanic Garden and Arboretum of Harvard University, who says:

In consideration of its market value at all ages, the rapidity of its growth, and the length of time it continues to throw up suckers, the white ash (*Fraxinus Americana, L.*) is the most valuable of all our native trees for planting in this State. Valuable as Massachusetts grown white oak is, it can never compete with that produced in other sections of the country for purposes which call out its highest qualities; while the slowness of its growth, and the difficulties which attend the early years of its cultivation, seem still further to reduce its value for the general planter as compared with the ash. Already there is a rapidly increasing export trade of ash lumber to Europe, Australia, and the Pacific coast, from Boston and New York, and the possibilities of this business can only be limited by the supply. The American is generally acknowledged to be superior to the European ash in the qualities for which it is specially valued, toughness and elasticity, and in which no other wood can equal it. Australia possesses no tree which is at all its equal for carriage-building, while west of the Rocky Mountains there is but a single one which can supply its place—an ash (*Fraxinus Oregana*, Nutt.) which, developing into a large and valuable timber tree in Oregon, is less frequent and less valuable south of the California line. Of the economic value of several species of ash which grow on the Eastern Asiatic seaboard, nothing is as yet known. It seems, then, that the New England States could command the markets of the world for one of the most useful and valuable of all woods, had they but a sufficient supply to offer.

According to Mr. Thomas Laslett, Timber Inspector to the British Admiralty, the specific gravity of American ash is .480, while that of the European is .736. The former is, therefore, on account of its greater lightness, far more valuable for the handles of shovels, spades, hoes, rakes, and other hand implements.

According to the United States census of 1870, the number of spades, shovels, rakes, hoes, and hay-forks made in that year was 8,347,478, and as our exportation of such implements is rapidly increasing, although still in its infancy, it is evident that the value of ash will be greatly enhanced at no distant day. It is also used in making ships' blocks, in turnery, and for making the oars of boats. In speaking of the white ash, Laslett says, "it stands well after seasoning, and hence we get from this tree the best material for oars for boats that can be produced. They are much and eagerly sought after by foreign governments as well as our own, and also by the great private steamship companies and the mercantile marine of this country; consequently there is often a very keen competition for the possession of them." The manufactory of oars (surely a seaboard industry), in pursuit of material, moved from Massachusetts first to Maine, and then to Ohio and other Western States.

Ash is coming into extensive use for expensive furniture and for the interior finish of houses, while an immense number of the young saplings are annually consumed in the coopers' trade. Its value for firewood, according to Bull, is 77, the standard, hickory, being 100, while only four other American woods are its superior in heat-giving qualities.

In view of its many uses for purposes for which no other wood can supply its place, it is not astonishing that the value of ash lumber has largely increased of late years. The present price in the Boston market of the best New England ash is $85 the 1,000 feet, or about $15 higher than that grown in the West.

To develop its best qualities, the white ash should be planted in a cool, deep, moist, but well-drained soil, where it will make a rapid growth. That the plantation may be as early profitable as possible, the young trees should be inserted in rows three feet apart, the plants being two feet apart in the rows. This would give 7,260 plants to the acre, which should be gradually thinned until 108 trees were left standing, twenty feet apart each way. The first thinning, which might be made at the end of ten years, would give 4,000 hoop-poles, which, at present price, would be worth $400.

The remaining thinnings, made at different periods up to 25 or 30 years, would produce some 3,000 trees more, worth at least three times as much as the first thinnings. Such cuttings would pay all the expenses of planting, the care of the plantation and the interest on the capital invested, and would leave the land covered with trees capable of being turned into money at a moment's notice, or whose value would increase for a hundred years, making no mean inheritance for the descendants of a Massachusetts farmer. The planting of the white ash as a shade and roadside tree is especially recommended, and for that purpose it ranks, among our native trees, next to the sugar maple.

Bee Notes for July.

BY L. C. ROOT, MOHAWK, N. Y.

It has been suggested that I did not make myself clearly understood in June "Notes," in regard to the time to place surplus boxes on the hive. It is impossible to indicate a stated date when this should be done, as the time that the bees will occupy the boxes will vary so widely in different seasons and localities. It is safe to say that boxes are usually placed upon the hives too early. As to the exact time, each bee-keeper must be governed by the yield of honey in his own locality. In Central New York, where white clover yields well, boxes should be in place during June; yet, in 1874, our entire yield was from basswood, when boxes were not necessary until the 20th of July.

Removing Full Boxes.

Boxes should not be allowed to remain on the hive after they are filled. They should be frequently examined, and removed as fast as full, and empty boxes supplied in place of the first ones taken off. In removing the boxes, take them from the hive and turn them bottom up, near the entrance of the hive. After blowing smoke into the holes of the boxes, rap them gently, and the bees will leave them, and return to the hive.

Old Combs.

I regret to learn from various parties to the effect, that in changing their bees from old box hives to those with movable frames, they have thrown away combs and brood, because they thought the combs were too old. The combs and brood are of more value than the bees. The value of old black combs is very much under-estimated by most bee-keepers. I have advised beginners to select colonies in old combs, in preference to those in new. It is a fact that cannot be disputed, that the losses in winter and spring are very much more numerous with young swarms in new combs. In view of this, and of the fact that they can be handled with less danger of breaking than new combs, old combs are much to be preferred. The value of the brood thus lost at the time of transferring cannot be overestimated, as the whole effort for the previous month is to secure brood. Save all good pieces of comb, and especially all that contain brood.

What is Over-swarming, and how Prevented?

When bees make preparations for natural swarming, they start several queen cells, and usually about the time they are sealed over, the old queen comes out with the first swarm. About nine days later, the first hatched queen will bring off the second swarm; a few days later a third issues, and at times a fourth. This is over-swarming, and in no way desirable. To prevent this, I would advise the following: When the first swarm issues, remove the old hive, from which the swarm came, to a new stand, and put a new hive in its place, into which put the new swarm. If the old hive has movable combs, open it on the following day, and clip off all but one queen cell; or what would be still better, clip them all off, and introduce a laying queen. There being none but young bees in the hive, they will readily accept a queen. It is desirable to take one comb from the old hive, and place it in the new hive, as it will aid in securing straight combs.

Caution in Regard to Feeding Sugar.

I have a neighbor who used "A" sugar the past spring for feeding bees, in which he found a blue substance, which settled by the spoonful to the bottom after melting. He had 60 colonies when he commenced feeding, and lost nearly all of them. Being acquainted with all the circumstances, I have reason to believe that the bees were poisoned by this substance, whatever it is. [We regret that you did not send us some of the sugar for examination.—ED.] I have known similar cases where such sugar has been refused on account of its suspicious appearance. The need of caution is obvious.

A Stone House Costing $3,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans were designed for the substantial dwelling of a farmer in easy circumstances. The

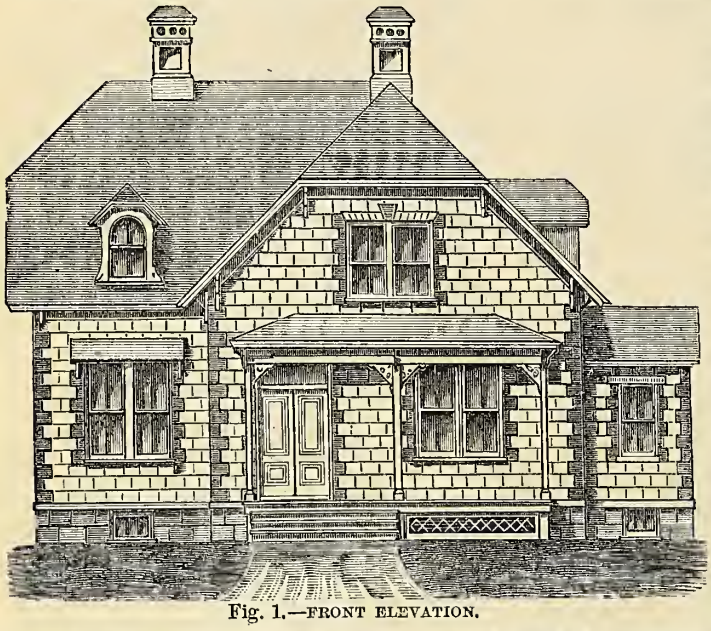


Fig. 1.—FRONT ELEVATION.

outside appearance truthfully expresses its rural and its domestic purpose. The interior accommodation are carefully arranged for comfort and convenience. The materials and method of construction insure permanency; with little care this building would last for many generations.... **Exterior,** (fig. 1.)—The elevation shows that this house was intended for the country—it looks like a farm house—in fact it would be out of place any where else. Its peculiar solid, independent, and home-like character, is due to the massive stone walls, large door and window openings, broad and steep slated roof, truncated gables, substantial chimneys, and heavy sheltering eaves, all arranged in simple, expressive, and harmonious combination. All superfluous ornamentation is avoided, as inconsistent with rural simplicity and truthfulness. Vines, and creepers, will be suggested by the rough stone walls and piazza posts—and to their delicate tracery may be left the work of "filling in" their more appropriate and agreeable decorations.... The **Cellar,** (fig. 2,) is 6½ feet high, extending under the whole building, giving ample space for the storing of articles requiring a cool moist air for their preservation. Seven windows are arranged to provide light and ventilation to every part. The outside entrance is from the rear under the back stoop, stairs lead directly up to the kitchen. The "safe" is a "locker," a private cellar for keeping choicer stores.... **First Story,** (fig. 3).—Hight of ceilings 10 feet. The arrangements are somewhat peculiar, and are very convenient and pleasant. Each of the four

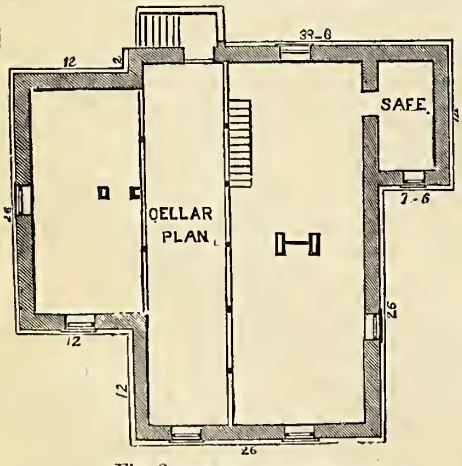


Fig. 2.—PLAN OF CELLAR.

principal rooms have windows giving views in two different directions. The two Halls, (front and rear), have stairs in each—and are otherwise arranged for easy communication with all parts of the house. The Parlor is pleasantly situated, adjoins the front hall and dining-room; has a large open fire-place; and is shaded on the front by the piazza. The Dining or living-room is the largest apartment, and communicates directly with every other room and hall on this floor—bringing this entire story under the immediate supervision of the mistress of the household. It has an open fire-place, and two closets. The Bedroom is placed in a quiet corner, where the little ones may take their "day naps" without being run over or disturbed, by sudden callers, or those engaged in housework. The Kitchen is a good sized apartment, adjoins the dining-room, rear hall, milk room, large pantry, two closets, and cellar stairway, and is provided with a large range, sink, wash-tubs, and the necessary pipes for supplies of cold and hot water.... **Second Story,** (fig. 4.)—Hight of ceiling 8 feet. This contains five good sized chambers, a large hall, and nine closets. The three larger chambers have full-sized side walls and ceilings; the spaces beyond the side walls or partitions are devoted

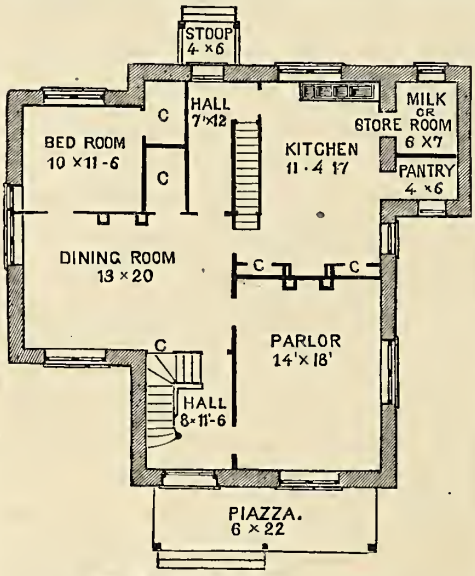


Fig. 3.—PLAN OF FIRST FLOOR.

to closets, of which there cannot be too many in any house.... **Construction.**—Unless situated on very high ground, having a thorough natural drainage, the earth taken from the cellar excavations should be left on the grounds and graded around the foundation, to insure the turning away of all surface water. In such cases, care must be taken to allow in the depth of the excavation for the hight it is intended to raise the earth grades. The appended estimate of cost is for excavating 3 ft. deep. This will furnish 202 cubic yards of earth, to raise the grades 1½ foot immediately around the house, (leaving 2 feet of the foundation exposed to sight,) and give a gentle slope outwards in every direction to the distance of 40 feet. All the outside walls are solid masonry. The Foundations are of the roughest stone, laid in good mortar, 2 feet thick. A "top floating" of hydraulic cement mortar is used in levelling the upper surfaces, to prevent the ground moisture from rising above that line to be absorbed by the main walls. The Main Walls are of rough stone and hard burned bricks laid in strong mortar, 16 inches thick. The outside corners, and the jambs and heads of the doors, and windows, are of brick, as shown by the sketch in figure 5. Their use greatly facilitates the work of construction, and obviates the necessity of expensive stone dressing. The intervening walls are of broken stone "random dressed," laid in courses to conform to the quoin lines of the brick work—and may be done by common masons. The window and door sills are of ordinary hammered blue stone. All outside interstices, and joints, are filled and pointed with ce-

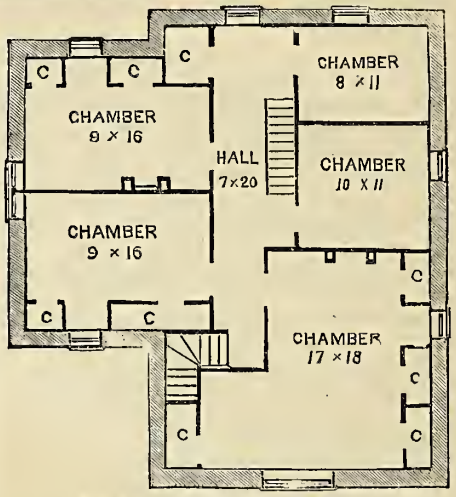


Fig. 4.—PLAN OF SECOND FLOOR.

ment mortar. Thin strips of wood, (mason's lath will do,) are laid in between the courses on the inside, to which the inside furring is fastened. The Chimneys are built of hard brick, and are finished above the roof with large tops, having cross openings at the sides for each flue, and close covers.—The FRAME-WORK is very simple; the central girders are supported by large posts on solid stone footing. The Beams are notched over the girders, with their ends resting and anchored in the walls, and are thoroughly bridged. The Plates are anchored by bolts that are inlaid while building the walls. The Rafters are notched over the plates with their lower ends extending 2½ feet beyond the walls; their centers are supported by purlins and collars. The Roof is covered with dark slate. The Flooring is of mill-worked 1¼-inch plank. The interior of the stone walls is furred off, with unobstructed spaces between the furring to the roof, for the passing off of all dampness. The interior finish is complete throughout. The principal rooms have neatly molded architraves—other rooms plain. The Kitchen, and rear hall, are wainscoted. All doors are paneled and molded, and all windows have inside blinds.—The Plastering is three-coat work, with the principal rooms hard-finished—balance white slipped. The Painting, outside, is two coats with the best materials—inside is oil-stained and flat varnished.... **Estimate:**

202 yards Excavation, 3 ft. deep, @ 20c. per yard	$ 40.40
224 perches Stone Work, complete, @ $2.75 ℔ perch	616.00
150 running feet Blue Stone Sills, @ 30. per foot	45.00
6,500 Bricks in quoins and chimneys, com'e, @ $12 ℔ 1,000	78.00
1,000 yards Plastering, complete, @ 35c. per yard	350.00
5,208 feet Timber, @ 2c. per ft.	104.16
viz. 1 Girder, 4x8 in. x 62 ft. long. 38 Beams, 3x8 in.x15 ft. l'g.	
1 Girder, 4x6 in. x 38 ft. l'g. 35 Beams, 3x8 in.x21 ft. l'g.	
2 Purlins, 4x8 in. x 38 ft. long. 12 Beams, 3x8 in.x10 ft. l'g.	
2 Purlins, 4x8 in. x 18ft. long. 40 Collars, 1¼x5 in. 13 ft.	
45 Rafters, 3x4 in.x 21 ft. long. 1 Valley, 3x8 in.x80 ft.l'g.	
8 Rafters, 3x4 in. x 17 ft. long. 1 Plate, 3x8 in.x200 ft. l'g.	
250 Wall Strips, @ 13c. each	32.50
300 Furring Strips, @ 4c. each	12.00
Anchors to beams and plates	5.00
Cornice materials	30.00
420 Shingling Lath, @ 6c. each	25.20
26½ squares of Slating, complete, @ $9 ℔ square	238.50
25 Hemlock Boards, Piazza Roof, @ 16c. each	4.00

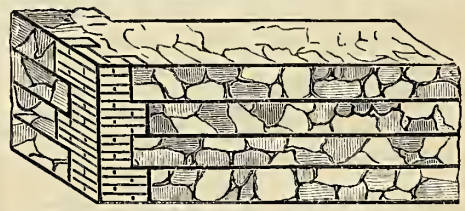
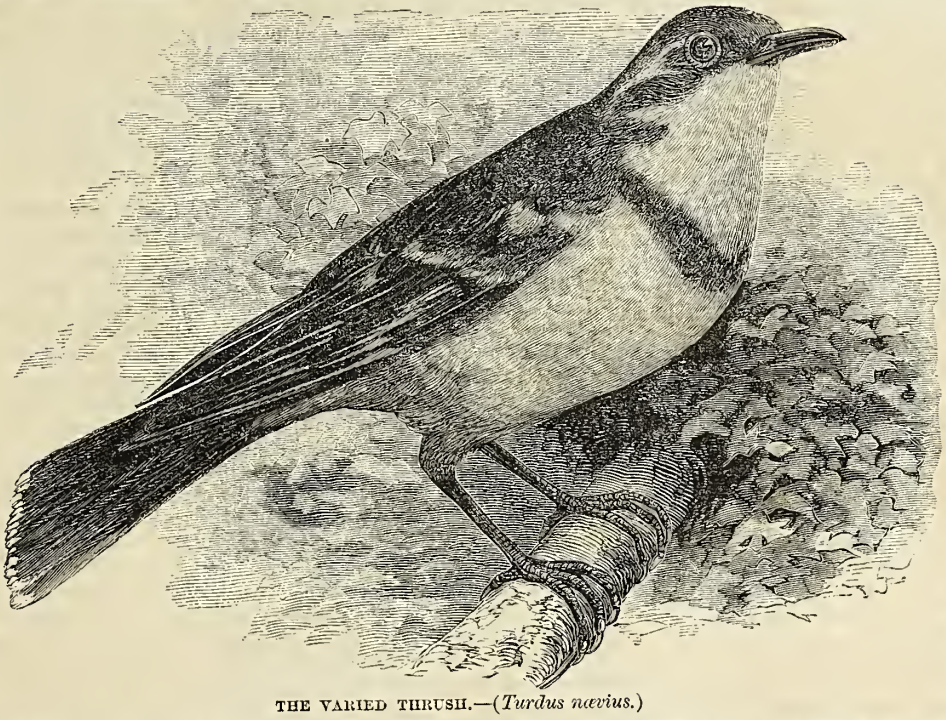


Fig. 5.—MANNER OF BUILDING CORNERS.

2½ square Tin, roofing and leaders, @ $8 ℔ square	20.00
296 Flooring, 8 inch, @ 25c. each	74.00
Stairs, complete, $90.00; Piazza and Stoop, $80	170.00
7 Cellar Windows, complete, @ $5 each	35.00
22 plain Windows, complete, @ $10 each	220.00
4 Dormer Windows, complete, @ $18 each	72.00
34 Doors, complete, @ $9 each	306.00
2 Mantels, 3 Shelves, complete	68.00
Closet finish, complete	38.34
Range and Plumbing, complete	175.00
Nails, $16; Painting, $60; Cartage, $15	91.00
Carpenter's labor not included above	150.00
Total Cost, complete	$3,000.00

The Varied Thrush—(Myrtle Robin of Oregon).

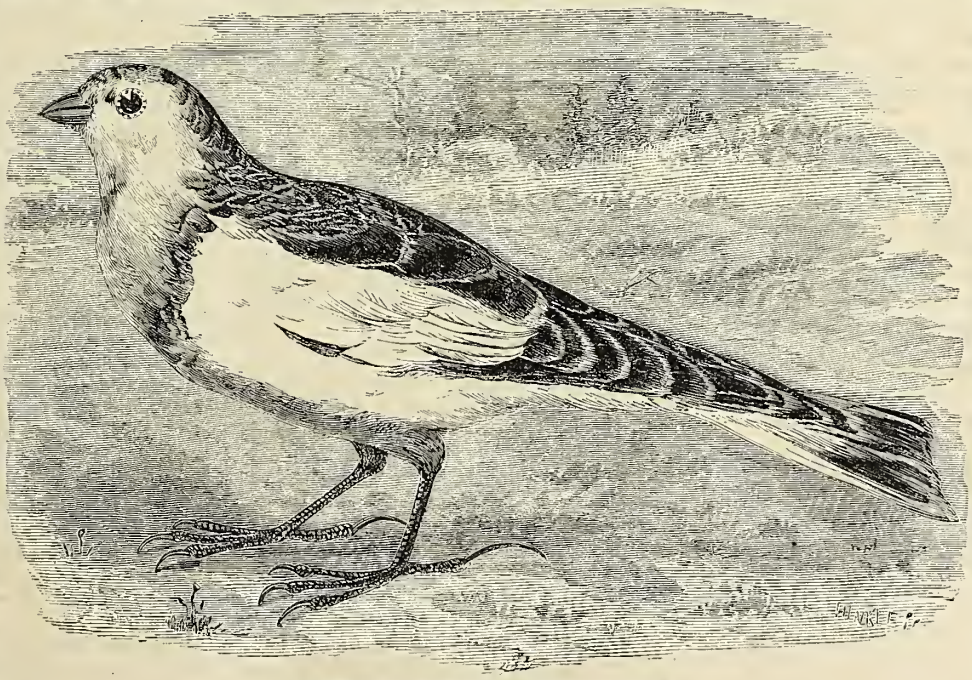
The so-called "robins" of America are very interesting birds; their quiet habits, pleasing form and plumage, inoffensiveness, and friendliness when encouraged, their sagacity, and devotion to their young, all tend to make them acceptable visitors, even though they at times may make somewhat free with the ripe cherries and other small fruits. Undoubtedly they do the farmer a valuable service, for they are active foragers, and the disagreeable cut worms and grubs furnish a large portion of their diet. The Common Robin of the eastern and middle part of this continent, the *Turdus migratorius*, of the naturalists, is the one best known to most of our readers, but another species of more beautifully marked plumage, the *Turdus nævius*, or Varied Thrush, is very common west of the Rocky Mountains, especially in Oregon, where it is known by the popular name of "Myrtle Robin" from its habit of frequenting the low bushes of the California Bay (*Orcodaphne Californica*), which in Oregon is called Myrtle. We recently received specimens of this bird from Dr. F. S. Matteson, of Coos Co., Oregon, a naturalist and taxidermist. The engraving was made from a specimen of the male bird, whose distinguishing marks are the black band entirely across the breast, and the white stripe across the extremity of the tail. This species was discovered at Nootka Sound, which borders the extreme south-western point of British America on the coast of Vancouver's Island, in 1826, in Captain Cook's third voyage, and it was afterwards found by Mr. Nuttall to be abundant on the western sides of the Rocky Mountains. Mr. Nuttall noticed that this bird was migratory on the Columbia River, arriving from the north about October, and spending the winter there. Of its habits he was able to learn very little further than that it is found in the forest flitting about in small flocks, and perching upon low bushes. It is generally silent, shy, and difficult of approach, and occasionally disappears entirely for a time. The male has a black bill; the back and poll are dark leaden gray; the tail feathers rather lighter, tipped with white; a band of reddish-orange extends from over each eye down the sides of the neck; the wings are banded with reddish-orange, and the throat and breast are of the same color, the breast banded entirely across it below the throat with a broad blackish-gray stripe; the middle of the abdomen is white. The length from bill to tail is 10 inches. In the female the orange-yellow markings are paler, and the upper parts are tinged with olive-brown; the tail feathers are margined with dull reddish-brown, and the band across the breast is lighter than in the male. Of its habits of nesting we are not informed, but hope to procure more exact information in this and other respects from Dr. Matteson. Occasional specimens have been detected on Long Island and in other Eastern localities, but these are regarded as wanderers strayed beyond their ordinary limits, although they may possibly become acclimated here.



THE VARIED THRUSH.—(*Turdus nævius.*)

The Snow Bunting.

A few months ago some interest was excited by the appearance in the New York city markets, of a number of small birds offered for sale, which had black wing and tail feathers, but were otherwise plucked. These were purchased and served up at the tables of one of the restaurants as a delicacy. The fact was noted in the *Turf, Field and Farm*, a journal devoted to field sports, and natural history connected therewith, and its notice gave rise to some differences of opinion amongst its correspondents, as to the scientific name of the bird, and brought out some information as to its haunts and habits. Having been quite well acquainted with the bird, during a residence of some years in the north-western part of the country, we at once recognized it as the "Snow Bunting," *Plectrophanes nivalis*, of Linnæus, or *Emberiza nivalis*, of Wilson and Nuttall. This little bird is common all over the northern parts of the continent, and is seen in large flocks during the winter time, restlessly flitting hither and thither, and most actively a short time before the sweeping snow storms occur, that are so common to that region. They are generally found in the open places, upon fences, bushes, or on the ground; and during storms, or in settled fine weather, they disappear in the woods and swamps, or appear in smaller flocks, or in a scattered manner individually, in the latter case quietly seeking food upon the roads, or around houses or lumberers' camps. The engraving is from a specimen of a male bird, which has the body generally white, with the wing and tail feathers and also the bill black. The female has less conspicuous markings, and her back and head are tinged with brown. During the winter this bird migrates southward, and is found in New England and the Middle States, sometimes as far south as Kentucky. Unfortunately for the peace of this little creature, its flesh is remarkably well flavored, and it becomes the prey of the hunters, who are enabled by reason of its peculiar habits, to shoot it in large numbers. Being very social, and flying closely when in flocks, or perching upon fences in long and close lines, the gunner rakes them with most destructive effect, a discharge of both barrels of a gun sometimes dropping over a hundred birds. They are common in the French portion of the Dominion of Canada, where the inhabitants, like their ancestors, are more given to the consumption of small game, than are those of British descent. To supply the markets, they are often trapped in large numbers, corn-meal or oats being used for a bait, and frequently a large wire sieve serves for the trap. Their food consists of seeds, insects, and the minute molluscs which are found upon the shores of sea inlets, lakes, or on the banks and bars of rivers. A correspondent of the *Turf, Field and Farm*, who has resided in that portion of British North America known as the Red River Territory, where the climate is somewhat similar to that of Northern Minnesota, has observed them in that locality, where they are very numerous, and where the excellent qualities of their flesh make them also there the prey of the hunter. It is to be hoped that they will not become in demand to supply the market, else, from the readiness with which they may be captured, we should look for the early extinction of the most agreeable feathered companion which the northern residents possess during their long, tedious winters.



THE SNOW BUNTING.—(*Plectrophanes nivalis.*)

Among the Farmers.—No. 6.

BY ONE OF THEM.

Since I have lived in this County, though we have had early and late seasons—some very early and very late—nevertheless the apple trees have every year been in full blossom in the week including the 15th day of May—and after this, unless storms put back farm work, nobody thinks whether the season is early or late. The Indians used to plant corn as soon as the white oak leaves were "as big as a squirrel's ears." This occurs just before apple-blossoming time, and at just about the time we consider it best to begin with our corn planting. In this County there is a great dependence placed upon moonshine—I fancy it is rather a weak staff to lean upon, yet it is very hard to *prove* there is not some influence exercised by the moon upon seeds. I can only say that I have perversely and systematically gone, for the past ten years, exactly contrary to the "signs" of all kinds, so far as I could learn them, and have never seen any evil effects from it.

How Weeds are affected by the Winter.

The battle with the weeds is waged early and late, or it ought to be. If we could only manage not to have weeds go to seed, how easy it would be to fight and to conquer. I have often noticed with what facility we can uproot grass, and many fibrous rooted weeds in the early spring when the frost is coming out. My attention was called lately to this fact, and in connection with it, to the fact that all that large class of weeds which propagate themselves by underground stems or branches, like quack-grass, red sorrel, white clover, etc., during the winter lose their underground branches, as well as also many or most of their fibrous roots, so that if the mother-plant be cut up, or pulled up, there are none of the family left in the soil. Whereas, if the same be done in summer, a score or less of young plants, surrounding the old stool, spring up, and complete destruction is nearly impossible. Red sorrel, if examined in the early spring, will be found to have comparatively few roots, and these may be raked or pulled out with the plant. After a week or so of sunshine, little white buds will be found showing all along the principal roots, and the rootlets will exhibit all the appearances of growth, having increased in numbers, and laid hold upon the soil by a multitude of fibers. Now it is too late to do thorough weeding. The little white buds will each form a plant as surely as the root is broken. Where such weeds occur, the more "summer fallowing," (by which I mean plowing or tilling to kill weeds,) we do in *March* the better.

Clean cultivation of small fruits of all kinds is the stereotyped recommendation of all who write about them. Some years ago I saw a venerable old farmer of our neighborhood, whose ancestors, no doubt, were the associates of Worter Van Twiller and Rip Van Winkle, grubbing out his raspberry patch on a warm winter's day, when the ground was soft as possible to the depth of two inches, perhaps. The common sense of the thing flashed upon me. With a clean bright hoe, the work is very light, for the tool cannot go more than two inches into the ground, if even so much; the grass around and among the stalks can be thoroughly removed, and the earth that is drawn away from the plants is only that which the plow or cultivator throws back again, and which, without dressing off with the hoe, accumulates too much. This practice combines, with its other advantages, the one to which I have just alluded, that of destroying with the mother-stool all the sucklings. The only objection to it is that the feet are very uncomfortably loaded with mud, and need to be shod with rubbers.

When to prune Apple Trees.

I have found it difficult to convince my hired men that March, when there is little other work on hand, and when the days are not so cold as earlier, is not the best time to prune apple trees, and nothing would stop it but an absolute command that no limb bigger round than one's thumb should be cut off after the middle of February. A year ago last March, as a man and I were driving, I saw a neighbor sawing off some good sized limbs from his apple trees, which stood near the road. "There," said I, "Christian, take a look at those scars where the limbs are cut off, and a year from now you will see the bark black all around the edges, and a long streak of black and dead, or half-dead, bark running down from each one for a foot or two, and within two or three years the wood will be rotten, and at every scar there will be the beginning of a hole into the tree." This year there is no question about the time to prune—and I have one convert to the doctrine that apple trees are best let alone for three months before they blossom, and that they may be pruned at any other time of the year—for the prediction came as true as was possible. There they stand, a nice row of young apple trees—each one with a canker spot, or two or three of them, eating into its heart. They are not alone—there are a plenty of them all over the country, and no matter how often the papers and books say "prune after the leaves fall," or "do not prune in the spring," the old fogies will do it in their own way.

Cheap Fencing for Woodland.

We are troubled hereabouts with laborers who cannot swing an ax to good account, the result is that nobody who has to employ them can afford to make post-and-rail fence unless he does it himself. Where there is a plenty of young timber, especially chestnut and cedar, we find the cheapest and best fence that we can have is what is called the "gun fence." These are common all over the country—but perhaps few have discovered that it is the only fence that a greenhorn immigrant can build well. The stakes should be made of split chestnut, or of young cedars, about three inches through at the small end. I saw this kind of fence in use in Eastern Connecticut along a railroad. It was where the road ran through some young timber, and part of the way the ground was quite rocky, so that the stakes could not be driven into it—here a cross-piece was nailed to the stakes near the ground, holding them together. This fence was made of rather heavy stuff, but no doubt it was put up at a much less expense than either a post-and-rail or strip fence. The latter requires to be made by skilled workmen, and there is a necessity to purchase the strips and posts, or to have the timber cut, hauled to the sawmill, and hauled back again—while the gun-fence, as already said, can be made by any laborer who can cut down a "staddle," and split one now and then. The principal use made of this kind of fence is through swampy land where posts do not hold well. I never heard of a gun-fence blowing over, but where the winds have a fair sweep, post-and-rail fences are very unstable upon soft ground. For the information of those who may possibly be unfamiliar with this fence, let me say that a gun-fence is a three-rail fence, the rails not sharpened, one end of each resting on the ground, and each rail supported at its upper third upon two stakes driven into the ground in the form of an X:—thus, if the rails are 12 feet long, the crossed stakes will stand about 4 feet apart, and not only hold one rail up, but hold the one beneath it down.

Hoop-poles—Timber Culture.

In writing about timber, I am reminded of the great losses our woodland, that is not carefully guarded, and that is conveniently situated, sustains every year, from the depredations of the hoop-pole thieves. My woods are full of hickory and oak poles cut and left, because for some cause the thieves could not get them away. Probably they were cut in the expection of a fall of snow which did not come. These depredators come on moonlight nights, and very early in the morning in the winter. We have severe laws, but it is next to impossible to catch the thieves. Then, too, they are shielded by political or other influences, so that conviction and punishment are absurdly rare.

The cure for this state of things is the cultivation of our forests. If trees were planted and cared for, and thinned out systematically for hoop-poles, the value of the woodland would become appreciated, and we would take measures to stop this thieving as much as we would the stealing of corn out of the crib. It is because our timber does not represent the result of labor, but is a natural product, that so little account is made of it in estimating the value of land. It is no uncommon thing to know of land, heavily timbered, selling for less than the wood upon it is worth. It is not long ago that I heard of a piece of land being sold, in an adjoining county, when the buyer at once sold the standing timber, the whole to be cleared within the year, for more than he paid for the land. This shows something thoroughly wrong in our estimates of values. I do not think the market price of wood would rise essentially, but the woodland owner would get a much larger proportion of its market price than he now does. In timber culture here at the East, at least, hoop-poles are sure to be a source of great profit.

Dead-furrows in Grass-land.

The plowing-match which was held by the Queen's Co. Agricultural Society last year, caused among the few farmers who were present a good deal of discussion about plowing. Swivel-plows for level land plowing were talked about. Several of us had had some experience with them, and were ready to give opinions pro and con. It is a very nice thing, no doubt, to have one's field free from dead-furrows and ridges, but it is nicer to hold a plow that runs smoothly, and does the work exactly as you want it done. When a man once has a plow that suits him, he will not be likely to exchange it for the best swivel-plow that was ever made. The plowman has harder work, the horses have harder work, and it is not nearly so rapid as with a fixed plow. Just before the time I allude to, I learned a practice which, when put to the test, is most satisfactory. When laying down land to grain and grass, where the dead-furrows come, turn two on each side into the dead furrow. This effectually hides the trench, however deep it may be. If absolutely perfect work is required, then turn *three* furrows back again, taking but very little at the third. When harrowed, no evidence of the dead-furrow is apparent. I have been a strenuous advocate of the use of swivel or side-hill plows for level land, and still think no other plow ought to come into gardens and other small lots, but the difference in the cost of labor, (even if estimated only in oats fed to the horses,) is so palpable that I have nothing to say now on my once favorite theme.

Bees—Wasted Sweets.

Why is it that we have no more bees? Hives are as nearly perfect as human ingenuity can make them. The loss of swarms may be almost entirely prevented by a little care. Forage for bees abounds, and acres of honey are hardly sipped. I see the number of hives of those few who do keep bees, does not sensibly increase from year to year. Honey is 18 to 20 cents a pound, and hard to get at that. I do not keep bees now, and have not since moving into this County. The reason is, I can not buy a stock of any of my neighbors who keep them; I have only recently learned the reason. Some kind, or all kinds of bad luck, is believed to follow the *sale* of bees. So for this reason they can't be bought. For the same reason, no doubt—lest the bees become offended, and work some subtle injury—the little workers are kept thoroughly informed of the more important events which take place in the family. "Bees! Becky 's dead—poor girl! She came and told you when Grand-pa died, but she's gone now." Or—"Bees, we had a baby born this morning. You'll see him running round next year if he does well."—What wonder that the apparently supernatural, or superhuman intelligence of the bees, should lead the superstitious to consider them endowned with reason, and perhaps with the ability to exercise some mysterious influence in human affairs. Argument is useless. So the bargain takes this form. "Well, neighbor, since you won't sell your bees, and I must have some, what's to be done?"—"Well, but that's your matter."—"Yes, and I shall steal a couple of hives if I can find some good heavy ones. So if you find a five dollar bill under a stone on the stands, you may think there were honest thieves around, that's all."—"No, no, you mustn't steal 'em—but if you have to, 'twill be all right, I guess."—So the bees are taken off. By the way, it is hardly safe to move bees to a less distance than three miles. Five

miles is the perfectly safe limit. When off foraging, if they come upon familiar ground, they will go back to their old home, and only strengthen some of the stocks still upon the ground.

Milk-Fever in Cows.

We have had some excellent cows die of milk-fever in this vicinity within two or three years. All were butter cows. I am strongly inclined to the opinion that this disease, which I suppose is fatal in 50 per cent of the cases which occur, if not in more, is a malady having its seat in those fat-secreting cells which produce the butter globules. It seems almost as if there were this ever present danger to rich milkers, which places a limit upon the excessive production of butter. I have practiced for years upon the theory that a cow could hardly be in too good flesh to come to calving, and so after the milk was dried, used to begin feeding, and have never had a case of fever. I would do the same now with common cows, with grade Short-horns or Ayrshires, or Devons, or Dutch cows, or with any full bloods which do not yield particularly rich milk, but not with Jerseys or Guernseys, for many of these possess such a tendency to butter-production, that the risk would be too great. The ordinary cow calving in thin flesh, is weeks or even months in coming up to her normal condition, in quality of milk and in flesh; if well fed before she calves, and especially if really fat, she gradually "milks down" as to flesh, as the term is, but gives back every ounce of meal in butter. It seems as if it was the conversion of this fat, already stored in the system, into butter, which gives rise to the fever, perhaps because it takes place, or begins to take place abundantly, as soon as the new milk begins, or should begin to flow, when the glands are in the most sensitive condition. Fortunately heifers with their first calves are free from danger from milk-fever, for this reason we may, I assume, always know if a cow is likely to have it, for she is in danger if she be a very rich milker—a real butter cow. Such a one must be kept thin until after calving; then, or after ten days, she may be fed liberally, and upon the richest food that she will digest. The milk of cows which are in danger of milk-fever is, as a rule, too rich for their calves, if they "come in" fat, and even if they do not, the milk sometimes becomes too rich after a few days of good feeding. There is therefore less reason for wanting very rich milk at first, and such cows, if they are healthy in other respects, quickly recuperate with such care. A cow may be moderately thin, and yet in an excellent condition of health, and this should be, as I now view it, the aim of Jersey and Guernsey breeders, and of all who have cows giving over say 8 or 9 pounds of butter a week.

It would be very useful if owners of cows which die of, or which have the milk-fever, would send to the *American Agriculturist*, statements in regard to the size of the cows, and the richness of their milk, their age, and the amount of butter they have been known to give in any definite period. It would be well also to know how near to the time of calving they were milked, and in what condition they were in as to flesh.

I have known of several cows that had the fever, after being milked right up to calving, and this has very likely an important influence, and certain it is that large swollen udders, accompanied by inflammation, (garget), frequently precede an attack. When this symptom exists, every effort should be made to prevent or reduce fever; for example, a loosening diet, (linseed-meal, bran, or potatoes), mild purgatives, if necessary, frequent bathing and kneading of the udder, drawing the milk if it accumulates, and keeping the cow in fresh air, but out of drafts, in a warm box in winter, and in the pasture by day, and in a yard with a good deep open shed in summer. If a cow approaches calving on a grass diet, care should be taken that she does not get fat, for some of the best butter cows will fatten rapidly when they are not milked.

Calves of Very Rich Cows,

may be fattened in some cases faster upon half skim-milk, than upon the whole milk of their dams. It is well known that great milkers, though the milk be so poor in cream that it is hardly worth setting for skimming, will often fatten two calves at a time. The calf needs a portion of cream or its equivalent, and if to about three quarts of new milk from its dam, all the sweet and warmed skimmed milk it will drink be added, it will usually thrive much better than upon very rich milk; and I have frequently supplanted cream with oil-meal reduced to a thin mucilage, and been complimented upon the excellence of the veal by the butcher to whom the calves were sold. All calves will not do so well as this indicates, and with many the whole milk seems essential to thrift and rapid fattening.

The Woolen Interests.

One of those strange and unnecessary periodical panics, which so seriously affect, and for a time prostrate, the wool-growing and woolen manufacturing interests, seems to be approaching. The first symptoms of the outbreak are occurring in California, that home of alternate flush times and panics—of the most sanguine expectations, or the most reckless hopelessness. We read of flocks being sold for one dollar per head, or slaughtered by the deluded owners for their pelts and tallow. It is to be hoped that this absurd feeling may not spread. It is the most ruinous thing in all our agricultural affairs, this eager haste to abandon a pursuit at the first fear of a falling off in profit; for there is no question of any loss in the business. Wool does not bring so good a price as formerly, and instead of taking the bad seasons with the good, and awaiting the surely coming turn in business, farmers throw away their flocks and abandon sheep-keeping. The consequence will be, a scarcity by and by, and then the pressure will come upon the manufacturers, who, from the lack of material for their factories, will be obliged to pay exorbitant prices, or seek foreign markets. The high prices will then put farmers in a fever again, and at length the usual revulsion will come once more. So occurs this childish or foolish alternation, which brings disaster, and prevents proper regard being given to the improvement of our flocks. Had not a few men in Vermont preserved the blood of our Merinos pure, and kept their flocks intact when others slaughtered them for their pelts, where to-day would have been the American Merinos? Extinct! and all the labors of those patriotic and thoughtful men who first introduced the Spanish Merinos into America would have been in vain. Until this senseless and destructive habit can be cured, and farmers learn to stick to a chosen line of business, through fair weather and foul, we can never hope to become independent of foreign nations, either for our stock or for our wool. Neither can our woolen manufacture become a steady business, but will always be injured and discouraged by alternate prosperity and reverses. Wool can be grown at a profit for 30 cents a pound, when mutton can be sold at present prices, and where pastures are so cheap or costless as in the far West, half this price will pay a fair profit to the shepherd. Instead of abandoning the pursuit, it would be a profitable thing to do to improve the flock and make each sheep produce more wool and mutton, which, if sold for a less price, will bring just as much money. Wool manufacturing will then be put upon a steady basis, and farmers can afford to laugh at tariffs.

Artificial Incubation and Rearing of Chickens.

Various methods of hatching eggs by artificial heat have long been in use. The oldest method known, one in which the heat of ovens is the agent employed, has been in use amongst the Chinese, and the Arabs and Egyptians, for many centuries. With the Arabs, the heat of fermenting horse-dung has also been made use of for an unknown number of years. This process was made the subject of an English patent about a century ago, and a small book, descriptive of it, was published at the time. This process has again been revived, with the addition of improved appliances, which have been recently patented in this country. The Chinese method was, and still is, to place the eggs bedded in sand in baskets or wooden boxes in low sheds of straw, plastered with clay, and having floors of tile, beneath which a small fire is kept burning. The heat is regulated by the sensations of the attendant only, and it is therefore not unusual for many eggs to be either under or over-done in the process, and lost. After a few days the eggs are examined, and the unfertile ones picked out and rejected. When the period of incubation is nearly ended, the eggs are removed from the sand, and placed upon shelves covered with cotton, but without fire underneath, until the chicks appear. The Egyptian method is, to lay the eggs upon mats covered with bran in an oven about four feet high, and the heat is applied from flues above the ovens, in the floor of a vaulted chamber, which has an opening in the floor leading into the oven beneath, another in the vaulted roof for ventilation, and a door in the front for entrance and egress. The eggs are examined after six days by being held before a bright light, when those that are failures are readily detected and thrown out. Travelers who have visited these Egyptian ovens, speak very forcibly of the unsavory character of the atmosphere in the apartments connected with them, in which the attendants live, and eat and sleep. The undesirableness of such an apartment can be easily imagined. In the 15th and 16th centuries two of the French Emperors undertook the business of poultry raising on the Egyptian plan, but further than that Francis I. bought and paid for 1,300 eggs, history does not mention how the speculation resulted. Many persons since have followed the royal example without, so far as recorded, getting much beyond this result. After this, a French nobleman tried an improved plan, more closely approaching the natural method, in so far as he used feathers as the bedding material, with lamps as the heating apparatus. History records this as a decided failure. Following this, was an attempt made by Reaumur, the inventor of the thermometer which bears his name, and a scientific man. His method was to place the eggs in drawers arranged over a baker's oven, but afterwards stoves were used for heating. Although Reaumur invented a thermometer, yet he used the very rude test of the melting of a mixture of butter with half its bulk of lard, kept in a small bottle, to determine the proper heat to be maintained. After this, the philosophers took up the business, and discussed and experimented over it until hot water was substituted for dry heat, and the air surrounding the eggs was kept moist by the evaporation of water supplied in pans. Reaumur's efforts, however, seem to have almost exhausted the subject; for he used fermenting manure and tan-bark, taught capons to brood upon eggs and nurse the chicks, and to cluck and scratch like hens, and also invented artificial mothers of furs. Then came M. Cantelo, who was very successful as an exhibitor, no longer than 30 years ago, who used a sort of spring bed of canvass for the eggs to lie upon, and the heat from a current of warm water flowing over glass immediately above the eggs. He it was who discovered that the proper heat to hatch eggs was nearly 106 degrees. Of late years there have been many efforts to perfect a method of artificial incubation, and to get rid of the hen, which unfortunately is too fussy and too slow for our advanced ideas. Now that poultry bears so high a price, and young chickens for broilers are worth more than full grown fowls, it is very desirable to have some way of improving upon the slow and unsatisfactory methods provided by nature. The most promising of all the methods, old or new, with which we have become acquainted, are those which we here illustrate and describe. One is the invention of Mr. A. Corbett, in which the old-fashioned heating material, horse-dung, is used. The apparatus consists of a rounded box (fig. 1) made of laths, having a door in the front and a movable cover at the top, in which is a ventilating flue having a graduated opening closed by a slide. This is placed in the center of a pile of horse manure, which raises the necessary heat in a short time. When this has occurred, the eggs, arranged in wire sieves or frames, are placed in the box, and the cover is put on. The heat is carefully regulated by the ventilating slide when shown to be necessary by a thermometer laid

upon the eggs. With proper attention, but little trouble is given until the chickens appear, when

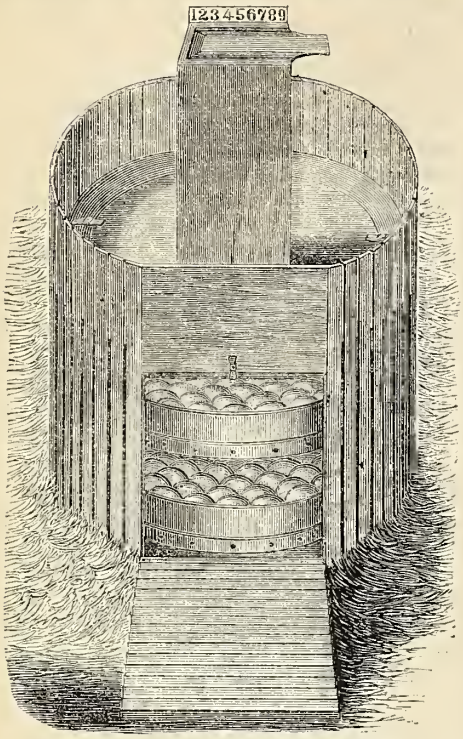


Fig. 1.—PROF. CORBETT'S INCUBATOR.

the mother is made ready for them. This is a box exactly the same as the incubator, but provided with a horizontal disk, covered on the under side with a piece of sheep skin from a long-wool sheep, and arranged to be moved up or down by a screw. The manure is heaped partly around the box, to provide the needed warmth, the door is let down for a pathway in and out for the chicks (see fig. 2), and in this they are placed as soon as ready to be removed from the incubator. After having been fed a few times, the chicks will learn to come out from beneath the wool to feed, when the platform is tapped. Mr. Corbett has been very successful in using his apparatus, and when visiting his establishment, we saw the proof of his success in the young, thrifty chickens, which looked strangely as they swarmed about without any hens to own or take care of them. The results of Mr. Corbett's

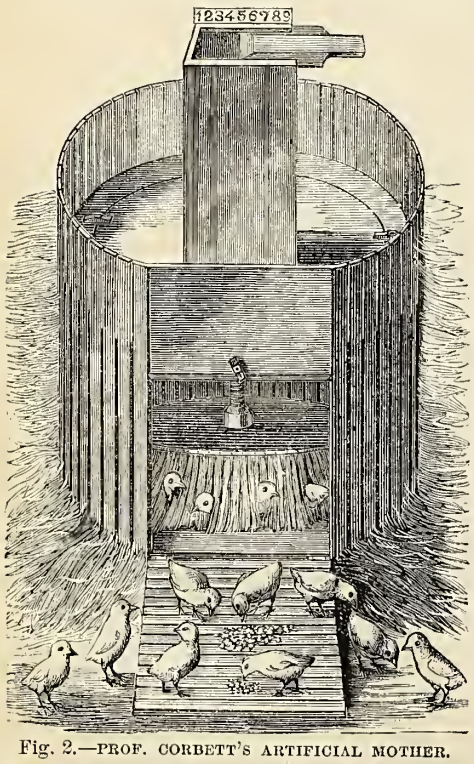


Fig. 2.—PROF. CORBETT'S ARTIFICIAL MOTHER.

investigations and experiences have been gathered into a small book, entitled "The Poultry Yard and Market," which is published by the Orange Judd Co., and sold for 50 cents.

Another system, in which the heat is supplied by a gas jet or a lamp, and to which is applied a very ingenious and effective automatic arrangement for regulating the temperature, has been perfected by an officer of the U. S. army, W. G. Day, and an incubator operated on this system is made by Messrs. Day & Bro., of Garden st., Baltimore. There is nothing really new about this, excepting the automatic regulator and a warm chamber for taking care of the chicks until they are ready to be removed. These improvements are intended to avoid the difficulties heretofore met in operating this class of incubators. The complete machine is shown at figure 3. It stands upon a table or bench; a lamp or gas jet heats an air chamber, which supplies the necessary warmth, as well as a water vat which moistens the warm air. A very sensitive thermometric arrangement moves some clock-work, shown in the front of the machine, by which the flame is reduced or increased in size, as may be needed, and by which, if the change in temperature is so great either way as to risk the safety of the eggs, a bell is rung as a warning. There are glass doors at the ends and at the top, through which everything may be inspected, and the whole arrangement is so neat and clean, that it may be operated in a room in a house without offense. At figure 4 is shown a section of the apparatus; the direction of the currents of air is shown by the arrows, also the position of the shelves, which enables the young chicks to escape into the lower chamber, where the heat is moderate and where they may be kept and fed several days, if desired. A glass door at each end gives access to these chambers. We have carefully examined both these systems of hatching eggs, that

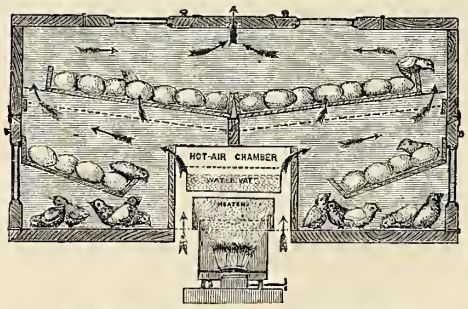


Fig. 4.—SECTION OF DAY'S INCUBATOR.

we might give the information sought by so many of our readers. With a somewhat extensive experience in raising chickens, and knowing all about the difficulties of bringing them through their early life, we think that any person may succeed in artificially raising them, who possesses the requisite patience, tact, and perseverance, who has an extreme liking for the business, and who will devote as much care and attention to it as is necessary for success in any other occupation. The man who becomes disgusted or disheartened at the first failure, will never be successful at poultry raising in any manner, and to succeed in raising fowls artificially, needs more skill and patience than to raise them in the ordinary way, while the rewards and profits of success are also proportionately greater.

Agricultural Engineering.

The frequent enquiries which come to us from all parts of the country for advice as to laying out farms or roads, planning buildings, draining, irrigation, and other such operations which relate to the professions of engineering or architecture, show very clearly that there is an opening for what may properly be called Agricultural Engineering. So far as we are aware there are few professional engineers who have made a special study of the needs of agriculture in this respect. The consequences are seen on every hand, in costly failures of amateur attempts to do this kind of work, in roads that cost more to keep them in repair every year than they are worth, and are very costly in use; in farms laid out so that the work of hauling the crops is doubled; in drains so laid out that the outlet is higher than other portions of them, or that the labor in making them is expended upon ground that needs no draining, and that which needs it is not sufficiently served; in attempts at irrigation which convert meadows into quagmires, and in pretentious buildings which are inconvenient in use, and unhealthful for their occupants. To avoid all these losses, and to meet the necessities of the many farmers who would willingly pay for compe-

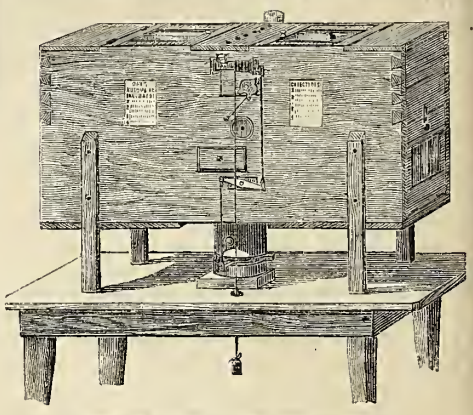
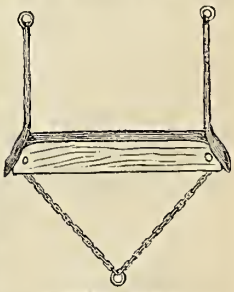


Fig. 3.—MR. DAY'S INCUBATOR.

tent professional assistance, there needs to be a class of educated engineers who will make agriculture a study, and who can then intelligently advise their clients, and economically supervise the expenditure of their money. The practice of irrigation alone offers a wide field; another is presented in the need for water supply and storage in reservoirs; and the proper laying out and building country roads, offers another opportunity of almost equal extent to that of railroad engineering, which, for the future, will probably be much less cultivated than heretofore. It has been held as a principle that when a demand arises, a supply will certainly be forthcoming. That is true to a certain extent only, but is entirely too slow in operation for this period of active enterprise. Now, the contrary is true, that a supply creates a demand, and this is shown by the success with which manufacturers and merchants make a market for their wares. No more conspicuous instance of this could be shown than the now world-wide business of supplying American agricultural machinery to farmers. There is no quarter of the civilized world where our reapers and mowers, hoes, axes, and shovels, are not in use. The consequence is immensely beneficial to our manufacturers, and there have been built up vast manufactories, which employ hundreds of workmen in making machinery almost entirely for foreign markets. These markets would not have existed had they not been made. It is precisely the same with regard to the agricultural engineer. Let him present himself and make himself known, and there will be abundant demand for his skill.

Whipple-Trees for Plowing Corn Safely.

We have found it beneficial to cultivate our corn crop until the rows become impassable for a horse, or until it was four feet or more high. But to do this with the wide whipple-tree, the ends of which project beyond the traces, and break down the stalks, is impossible. It may, however, be done by using a whipple-tree specially provided for it. This is made as



WHIPPLE-TREE.

follows: a piece of oak timber, two inches thick, three wide, and twenty inches long, is rounded at the corners, and deeply grooved at the ends, so that the trace chains may be entirely imbedded in the grooves. A small hole is bored through each end, into which a small carriage bolt is inserted, being made to pass through a link of the trace chain, and it is then fastened beneath

with a nut. The trace-chains should be covered with leather where they will rub against the corn, and a flap of leather should be left to cover the front corners of the whipple-tree, as shown in the engraving. A ring or an open link is fastened at the part of the chain which is attached to the clevis, and one at each end by which it is hooked to the traces. With this arrangement one may cultivate his corn without injury, and the same method may be applied to the whipple-trees for plowing or cultivating amongst trees in the orchard or garden.

A Simple Hen's Nest.

"T. B. P." sends a sketch of a hen's nest, made of a barrel, which is vastly better than one in which the head is knocked out, and the hen is obliged to jump down from the top into her nest, and thus break the eggs. He cuts two staves immediately above the hoops, and again six inches above the first cut, and then removes the pieces cut out, leaving a hole as shown in the engraving. The barrels thus arranged, are placed in quiet corners, where hens love to seclude themselves, and straw or other material is supplied for the nest.

NEST FOR HENS.

Tool-Boxes for Wagons, etc.

To go from home with a wagon without taking a few tools, is to risk a break-down from some unforseen accident, without the means of repairing it, and perhaps a consequent serious or costly delay. Those who do business regularly upon the roads, as those who haul lumber, wood, coal, or ores of different kinds, should especially be provided with a set of tools, as a regular appurtenance to the wagon, and the careful farmer in going to market or the mill, or even to and fro upon the farm, should be equally well provided. We have found by experience, that a break-down generally happens in the worst possible place, and where it is most difficult to help oneself. The loss of so simple a thing as a nut or a bolt, may wreck a loaded wagon, or render it impossible to continue the journey, or some breakage by a sudden jerk upon a rough road, may do the same. It is safe to be provided for any event, and the comfort of knowing that he is thus provided greatly, lightens a man's labor. At one time, when we had several wagons and teams at work upon the road, we provided the foreman's wagon with a box such as is here described, and it was in frequent use, saving a considerable outlay that would otherwise have been necessary for repairs, besides much loss of valuable time. It was a box about 18 inches long, 16 inches wide, and 6 inches deep, divided into several compartments. It was supplied with a spare king-bolt, a hammer-strap, wrench, some staples, bolts, nuts, screws, a screw-driver, a hammer, cold-chisel, wood-

WAGON BOX.

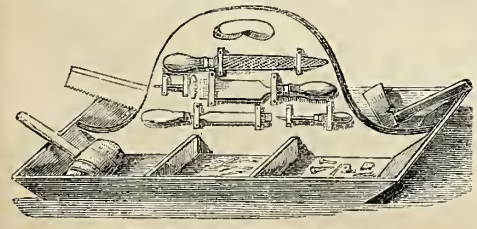


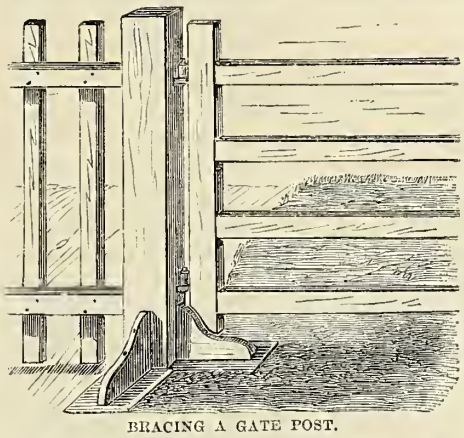
Fig. 2.—HANDY TOOL-BOX.

chisel, punch, pincers, a hoof-pick, copper rivets, a roll of copper wire, a knife heavy and strong enough to cut down a small sapling, a roll of narrow hoop-iron, some cut and wrought nails, and such other things as experience proved to be convenient to have. The shape of the box is shown in figure 1. The middle of the top is fixed, and on each side of it is a lid hinged to it, and which is fastened by a hasp and staple, and a padlock or a spring key. The box is suspended to the wagon reach, beneath the box or load, by two strong leather straps with common buckles. Being only 6 inches deep, it is not in the way of anything, and is readily accessible when wanted.

A tool-box that is handy to carry around at home, is shown at figure 2. It is an open tray of a convenient size, with a division in the center, which rises a foot or more in the middle. A handle is cut at the top of the middle piece, and below it some of the tools are suspended in leather loops; the rest are kept in one side of the tray, and in the other side are boxes for nails, screws, and other small matters. To have these tools that are in constant use kept together in this way, a place for each, and each in its place, will be found very convenient and to save much time when they are needed.

Braces for a Gate Post.

Newton Reed, of Dutchess Co., N. Y., sends the following description of his method of bracing gate posts, which is illustrated by the accompanying engraving: On the side of the post, and near the surface of the ground, spike an inverted bracket, made of a two-inch plank of white oak, or other hard wood. The bracket should be not less than six inches wide, and a foot long. There should be



BRACING A GATE POST.

two of these braces, one on the gate side of the post when the gate is shut, and one on the gate side when open. Under the bracket place a flat stone firmly settled in the ground, on which the bottom of the bracket is to rest; a piece of plank, as long as it lasts, will do instead of the stone.

The hang of the gate can then be exactly adjusted by putting a thin stone or piece of wood between the bottom of the bracket and the flat stone or plank. This is a simple and effective method of supporting a post, where there is no other convenient way of bracing, and even in almost all cases, it gives additional firmness. If the lower end of the post is of good size, and is well put in, this method of bracing will hold a very heavy gate.

The Culture of Rape for Seed.

A greater diversity of crops would, without doubt, be very beneficial to our agriculture. We have confined ourselves too much to two or three great staples. Cotton in the South, and corn and wheat in the North, occupy the greater portion of the attention of planters and farmers, to the exclusion of almost all other crops. These great staples are the money crops; "as good as the wheat" being in farmer's parlance the same as "as good as the gold." But sometimes we find ourselves deluded somewhat when we wish to turn our wheat into money, and the price is far from satisfactory. The wheat crop as it is now grown, does not pay. The cotton and corn crop are open to the same objection. We perceive no remedy but to raise other crops, and lessen the production of these, if we cannot turn them into other uses than to sell them upon a gorged market. But what other crops? There are but two kinds, feeding crops and those suited for manufacturing purposes; the one class to be used in producing meat for the market, and the other for use in mills and manufactories, in which many artisans may be employed, who shall create a demand for a portion at least of our other crops, nearer home than the other side of the Atlantic Ocean. A most encouraging beginning has already been made. The culture of broom-corn, of sorghum, of castor beans, and of flax, has been increased very extensively of late. The latter crop especially has been found not only a great relief to many farmers, but a very profitable culture, although the fiber has gone to waste, and only the seed has been utilized. By and by other crops will be found that may be added to the list. We cannot refrain here from regretting that the popular organization amongst farmers, from which so much was promised and expected, should not have been able by this time to have made itself felt in this way, to the encouragement of a market at home, rather than have devoted so much time and labor in vain to seek one abroad, where so much close and active competition must necessarily be combated under unfavorable circumstances. These thoughts occur as we consider a crop largely grown in other countries with profit, and now beginning to be grown here, that is Rape. This crop has the double advantage that it is an excellent fodder crop, and an industrial one as well, as the seed may be profitably

Fig. 1.—YOUNG RAPE.

Fig. 2.—RAPE IN FLOWER.

Fig. 3.—RAPE IN SEED.

used in the manufacture of oil. In the outset it might be objected that there is no present market for this seed, should it be grown. That is partly true, but not a valid objection, for our own circumstances in this country find a parallel in those of the French farmers in 1774, when Rape—or Colza, as it is there called—was scarcely known, until a work on its culture and the manufacture of oil from its seed, was published by M. Rozier, in that year, and its publication contributed greatly to the rapid introduction of this crop. Now the traveler through France, Germany, and Belgium, may see in the months of May and June, the whole country checkered over with broad fields or patches of a bright yellow, where this crop is blossoming. Such is the result which has followed, if it has not wholly resulted from, the fortuitous suggestion of this writer. Rape is somewhat extensively grown now, by some German farmers in Wisconsin, near Fond du Lac, where a market is found for the seed at a mill there established. From this commencement the business may spread, but it is certain that until the seed is produced, no mills will be operated for the pressing out of the oil. The first movement must be made by the farmers.

No crop is more easily grown than Rape in our Northern or Middle States, and it thrives upon any soil that will produce a crop of cabbages or turnips, to which plants it is closely related. The plants of the Mustard Family (*Cruciferæ*), like the cabbage, the turnip, etc., through long cultivation for different uses, for their seeds, their foliage, or for their roots, have varied so much that they present great difficulties to the botanists, among whom there is little agreement as to which species some of the cultivated forms belong. While some place the Turnip as *Brassica Napus*, and the Rape as *B. Rapa*, others of equally high authority regard both these as forms of *B. campestris*, which also includes the Swedish Turnip as one of its forms. Following the best American and English authorities, we may regard all the forms of Turnip and Rape as varieties of *Brassica campestris*, which is found in its wild state throughout Europe and Russian Asia, and which, as it has been cultivated with a view to increase the size of the root, or the abundance of its foliage and seed, has given rise to the different turnips and rapes. Of the rape sorts, in which the root is altogether disregarded, there are three forms cultivated. (1) That known in England as Rape or Cole-seed, which has abundant smooth leaves, and grown largely for fodder. (2) A form cultivated in northern Europe for its oil, and called *Colza* in France, and *Kohlsaat* in Germany; this has very rough-hairy leaves, and (3) a summer variety, which is sown in the spring, and matures its seed the same year, while the other two are biennials, and sown in the fall. Figure 1 shows a young plant of the oil-bearing Rape, with its long tap roots. It thrives well upon moist bottom lands, and also upon dry lands that are deep and rich, but cannot be profitably grown upon poor soils, without ample manuring. The spring variety may be sown as soon as the soil is warm, four quarts of seed per acre, being sufficient, and the seed is ripe for harvest in from three to four months, according to the season. The winter variety is sown in August or September, if sown earlier it is apt to blossom the same year. The seed is drilled in rows a foot apart, at the rate of about 3 quarts per acre. Thin planting favors the branching of the plants, and the production of the largest quantity of seed. The plant in flower is shown at figure 2.

The young plants are subject to the attack of the cabbage "flea," which may be driven off by scattering upon the leaves some lime slaked into powder, with water in which some carbolic acid has been dissolved, one ounce of the acid being used to a pailful of water. The fleas may be caught in large numbers by wheeling over the rows a piece of board smeared with tar, upon which the insects are caught as they jump from the plants. The seed is harvested when it is partly dry in the pods. A ripened plant is shown at figure 3. As the seed is very easily shelled, it should be harvested when moist with dew, either early in the morning or in the evening, or in the middle of the day, if there has been a light rain to dampen the pods. A common cradle, or a reaper, may be used, leaving the plants in rows upon the ground. The greatest care must be exercised in gathering and hauling the crop, and barn sheets should be placed in the bottom of the racks, or tight wagon boxes should be used to carry it to the thrashing machine. It may be thrashed by treading with horses upon the barn floor, with the flail, or with the ordinary machine having the concave raised, as the seed is very easily beaten out, and the pods are then not so much broken up, and the seed is left clean. It is necessary to store the seed carefully, as it will heat very rapidly when heaped in large quantities. The safest manner of storing the seed is upon the floor of an airy granary, in a layer not more than a foot in depth. As the seed loses weight rapidly, the loss being equal to one-tenth in the course of three months, the sooner it is disposed of the better. About 25 bushels of seed per acre is a fair average yield upon good soil. The seed of the best quality contains by analysis 50 per cent of oil, but from 35 to 40 per cent is all that can be pressed from it at the mills. There is therefore a considerable portion of oil remaining in the cake or refuse, which gives it a high value as food for fattening cattle. When, however, the seed is much mixed with mustard, as is sometimes the case, the cake is not fit for use, being extremely unwholesome and irritating to stock fed with it, sometimes causing death. As the mixture with mustard also greatly reduces the yield of oil, care should be taken to sow pure, clean seed. The seed pods and straw from the thrashing machine make a useful fodder for sheep and cows, and are worth saving for this purpose. They may be preserved in stacks, which should be covered with straw, or the rain will very easily penetrate them.

An Octagonal Barn.

There is considerable inquiry at present, in regard to barns of an octagonal or eight-sided form. It is probably not generally known that a line of a certain length will enclose the largest amount of space when it is made in the form of a circle, and that therefore a circular building would be more spacious and roomy, than a square one having the same length of outside wall. The nearer we approach an oblong form, the less space is enclosed within the walls, and for this reason square buildings are more roomy and cheaper than long and narrow ones, and those approaching to a circular form more roomy still. There is another advantage in an octagonal or round barn, which is still greater than the economy of space, and this is the possibility of building it with a dome-shaped roof, entirely without cross-beams. This very great advantage is to be the more appreciated now that the horse-fork is in general use for unloading hay, grain, straw, or fodder. There are various plans for laying out and building barns of this shape, in all of which the principles are the same. There is a concrete or stone foundation wall, which may be

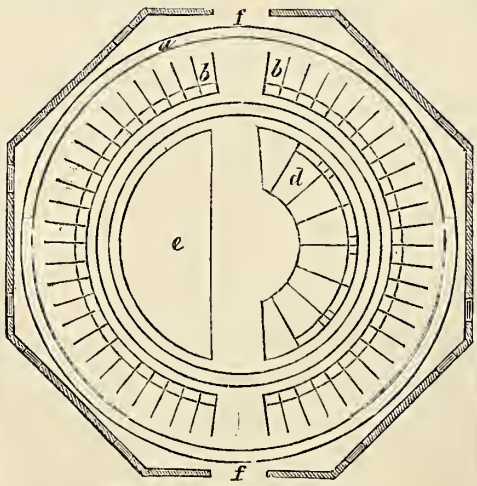


Fig. 1.—PLAN OF BASEMENT.

either below ground for a cellar, or partially below it for a basement, or wholly above it for a stable, an inclined way being built on two opposite sides, to give access to the barn-floor. Upon this foundation the sills are laid, the corners being made at an angle of 135 degrees, instead of 90 degrees, as in a square building. There are no cross-beams necessary except upon the floor, there being eight bents in the building, all on the outside, the plates being mortised exactly as the sills are, and the posts placed with regard to the necessary doors and windows, and the strength necessary to support the roof and stiffen the building. As many braces as may be thought needful may be used, but the braces must all be on the lines of the walls, and none of them cross braces. The roof is an eight-sided cone, strengthened with purlin plates, and may be open at the center for a cupola or ventilator. The joints of all the plates and the sills will be at an angle of 62½ degrees, instead of 45 degrees as in a square building. This form of the frame will give a roof of the strongest kind; one that can not spread, if well put together, and one that offers less resistance to the wind than any other form of elevated roof. Inside of the barn there is nothing to interfere with the piling of grain or hay to the roof, and a wagon may be driven anywhere upon the floor. For convenience and cheapness there is nothing more to be desired.

Fig. 2.—CORNER JOINT.

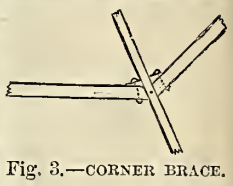


Fig. 3.—CORNER BRACE.

A barn of this kind was recently built by Mr. E. W. Stewart, a well known farmer in the State of New York, who is one of the lecturers upon agriculture at Cornell University, and has recently become one of the editors of the National Live Stock Journal. This barn was built in place of four others which were burned, and the large amount of space in it, made it equally as useful as the four which preceded it, for a farm of about 300 acres. It was 80 feet in diameter, and required a foundation wall 265½ feet long. The wall was of concrete, 15 inches thick at the bottom, and 12 at the top, 8 feet high, and cost $250. 65 barrels of water-lime were used for the concrete, each barrel, with the sand and stone added, making about 40 cubic feet of wall. The wall was built in the manner which was explained in the *American Agriculturist*, (in Dec., 1874). The plan of the basement is shown at figure 1, *a* being a passage for the cows, and a drive-way for removing the manure, wide enough for a wagon to pass through it; *b*, *b*, are the stalls for cows, of which there are 52, having the feed troughs towards the center, and all reached by an inner drive-way. At *d* are stalls for horses, each having the feed troughs opening towards the inner drive-way. There are six stalls, and a room at each end of the stalls for harness. At *e* is a place for storing plows, carriages, wagons, or machines. A drive-way, *f*, *f*, passes through the basement from east to west. As many windows as needed may be built in the wall. The sills of the barn are laid upon the wall, as already mentioned; the posts are 28 feet high, and the plates upon these support the rafters. The plates are fastened together at the ends by being halved, and the corners fastened by half inch iron bolts, as shown at figure 2. At each corner is a brace of 8 x 8 timber, bolted to and through the plates by ¾-inch bolts, and strength-

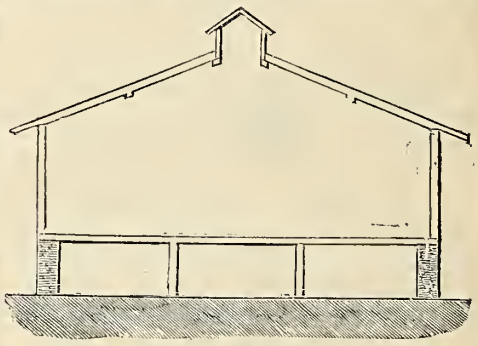


Fig. 4.—SECTION OF BARN.

ened by an iron plate on the inside, through which the bolts pass. The shoulders of the corner rafters rest upon these braces and plates, as shown at figure 3. These rafters are of 6 x 12 timber. Purlin plates of 8 x 10-inch timber are bolted under the rafters, and are fastened together at the corners in the same manner as the plates. The intermediate rafters rest upon these purlins. Iron tie-rods may be used to strengthen the rafters and hold them together, if thought necessary. Figure 4 shows the section, and figure 5, on page 260, the elevation, with a portion of the roof removed, to show the manner of laying the rafters and bridging them. The plate is seen at *p*, figure 5; the purlin-plate at *s*, and the bridging or tie-rods at *r*. A crown rim is bolted to the rafters at the point of the roof, or rather the rafters are bolted to the crown rim, which supports a cupola. The cupola is 50 feet from the floor of the barn, the roof rising 22 feet, and the posts being 28 feet high. The floor of the barn is laid upon beams, supported by brick piers or timber posts in the basement. A line of beams may be laid above the floor on either side, above which floors may be laid; the space thus made may be used for granaries, or storage of farm tools and machines, or other cumbrous property. A barn of this character offers an opportunity for division and arrangement, such as cannot fail to meet the circumstances of any farmer, whether it be used for stock or grain. In fact its simplicity and roominess are such, that few farmers would care to encumber it with much, if any, inside fitting, as nothing of the kind is really wanted, except the stalls for cows and other stock. If these were built low, or not more than four feet high, the general view of a lot of fine stock, thus arranged, would be one of the most attractive sights that could be met with amongst the many pleasant things about a well ordered homestead.

Bit for Self-sucking Cows or Weaning Calves.

There are many contrivances used or suggested for curing self-sucking cows, most of which are objectionable, because in use they may possibly wound and injure the animal. This applies to all sorts of sharp pointed things worn by the cow, as well as to straps, sticks, and collars, many of which a cow with any ingenuity can overcome with ease. To go to the root of the matter, we should prevent the cow from sucking at all, and this can be done by preventing her from making a vacuum in her mouth, by leaving an opening for the admission of air. This is done by the means of a hollow perforated bit, shown in the illustration. If the cow is made to wear this, suction is made impossible, and a small one worn by a calf will be equally effective. The bit is made of a piece of iron pipe, half-an-inch in diameter, in which several holes are drilled, and which is curved to a proper shape, and provided with rings, so that it may be attached to a bridle. The bit does not prevent an animal from eating or drinking, and may be worn continuously.

BIT FOR COWS.

Hints for the Workshop.—Making a Hinge.

A gate with a broken hinge is a very forlorn object, and one that declares to every passer by "here lives a poor farmer." If there is one thing more than another worthy of note and a cause of congratulation in this one hundredth year of the existence of the United States, it is the infinite number of small conveniences with which we are supplied, every one of which adds to the sum of our daily comfort. More than this, the majority of these little things, which are in use all over the world, are the inventions and productions of Americans. So plentifully are we supplied with these small conveniences, that we can not turn our eyes in any direction, without coming across some of them. It is these small matters which enable us to have so many neat and pleasant things about our homes, at so little cost of money, time, or labor. Therefore, to see a front-gate, or a barn-gate, or door, hanging by one hinge, is now so unnecessary a sight, that it becomes at once a conspicuous indication of the owner's character. One of the greatest of the small conveniences around the farm, or the mechanic's rural home, is the small forge already described in the *American Agriculturist* for May, 1875, p. 180. To make a gate-hinge with the help of this portable forge, is a very easy thing. We take a piece of half-inch square bar-iron, as long as may be needed, and heating one end, round it for an inch or two; then heating the other end, flatten it out gradually to a point for the same length, and bend it over a mandrel, or the nose of an anvil, into the shape shown at figure 1. We then cut off a piece of round half-inch bar, about two inches long, and drive it into the loop, tightening the loop around it as much as possible. The loop-end is then brought to a welding heat, and the joint closed around the pin, and neatly worked smooth with the hammer. Another piece of square iron is then taken, and worked at each end the same as the first one, the loop, however, is worked open upon a piece of cold $^5/_8$-inch round bar, so that it will be large enough to work easily upon the pin of the first piece. A thread may now be cut upon the round ends, or they may be riveted over a piece of iron plate, or a large washer, when they are driven through the gate-post and the heel-post of the gate. It is best, however, to have a screw-thread and a nut, using a washer under each nut, to prevent the wood from being crushed. The whole then appears as at figure 2, and is a hinge that can not easily be broken or worn out. In boring the holes for a hinge of this kind, a bit or an auger of only half-an-inch diameter should be used, so that the edges of the iron should cut their own way into the wood, and when the hinges are driven, a piece of hard wood should be laid upon the ends that are struck, so that they will not be battered by the hammer. Care must be exercised to have them driven in squarely, so that the gate may swing without binding on the hinges. For lighter hinges the same sized iron may be used, but the ends should be hammered out to a point, and the edges should be notched or bearded with a cold-chisel, as shown at figure 3. These may be driven into a post very readily, if a hole smaller than the iron be bored to lead the way, and when driven in, will not be easily drawn out. When it is necessary to draw a hinge that has become rusted in out of a post or gate, or that has been very tightly driven, it may easily be done by boring a hole above it, or on one side of it, or beneath it, a little larger than the iron, and then forcing it into the hole by means of a wooden wedge driven close to it. It will then be loose, and may easily be taken out without difficulty.

Figure 1.

Figure 2.

Figure. 3.

ARABLE OR GRASS LAND.—There is no reason why we should not have grass enough, and permanent pasture too, if we will. Even in the Southern States, the planters are discovering that their native or naturalized grasses make good permanent pastures, and grasses formerly regarded as pests, are now welcomed as valuable acquisitions. In the north and west, excepting the Blue-grass pastures in many localities, which are becoming more valuable year by year, and some which are now from 30 to 70 years old, we have no permanent meadows worthy the name of a pasture. Meat, butter, and cheese are now not only the most needed products, but the most profitable, and it is a question to be carefully considered and decided, if it is not possible and profitable to keep some lands in grass that are now yielding but a poor profit beneath the plow, and producing grain crops.

An Engine for the Farm or Workshop.

Recently we examined a small steam engine, which possesses more than usual advantages for the use of farmers, mechanics, or other persons who need a power that is both cheap and effective, perfectly safe and easy to manage, and which will occupy but a small space. The steam engine referred to is the "Little Giant," made by W. B. Snyder, of 84 Fulton st., New York, an engraving of which is given on page 260. We were especially pleased with this engine, regarding its structure as more than usually excellent for all the purposes to which a machine of light power can be adapted. The construction of the boiler, as shown in figure 2, is remarkably strong, and gives a very rapid and economical heating power, no more coal being required than would heat an ordinary parlor stove. The interior view of the boiler, as shown, is as follows: *B* represents the main boiler, which is of lap-welded boiler tube. *A* represents the top of the boiler—a heavy iron casting, which is threaded and screwed on to the boiler. *D* represents the bottom cap, which sets into the furnace, and is also a heavy iron casting, threaded and screwed to the boiler. *C, C*, show the smaller boiler tubes, which start from near the bottom, and enter the boiler about one-half way up. In the one-horse boiler there are 25 1¼-foot tubes. In the two-horse boiler there are 37 two-foot tubes. In the three-horse boiler there are 41 three-foot tubes. Each tube is well secured from the inside by a new and thoroughly durable process. These tubes project into the fire space, and give an abundance of heating surface; also, opening into the water space, they insure a free circulation of water, that must generate steam rapidly. The furnace is lined with fire-brick, and is well constructed for economy and durability. A jacket of heavy sheet-iron surrounds the whole, retaining the heat of the fire in contact with the boiler and external tubes.

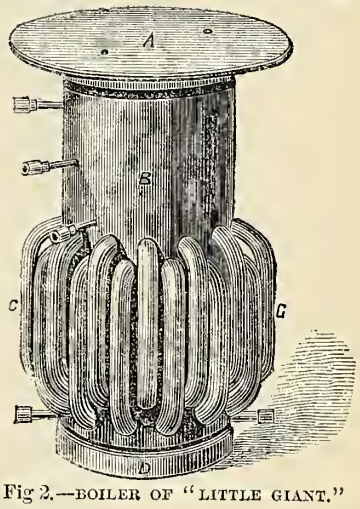
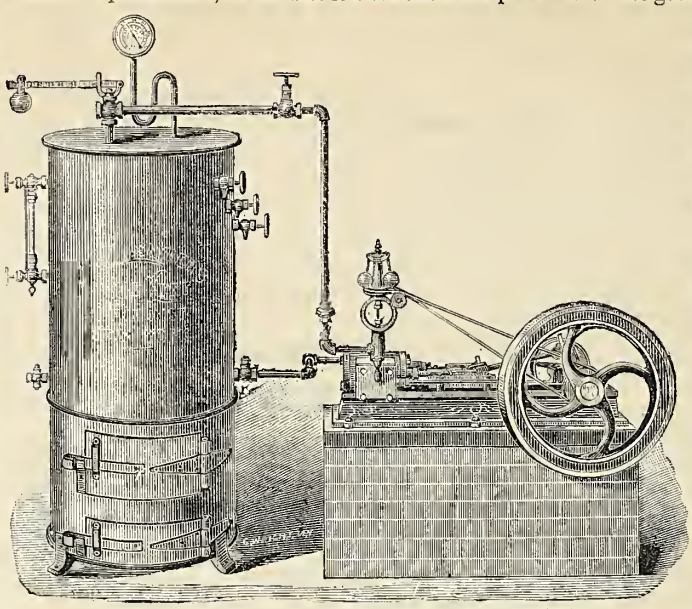


Fig 2.—BOILER OF "LITTLE GIANT."

Each boiler is tested up to 250 lb. pressure to the square inch, and is calculated to resist a strain equal to 1,000 lbs. to the inch. A two-horse engine has a cylinder 3¼ inches in diameter, with a 5-inch stroke, and will make 250 revolutions per minute. It occupies a floor space, including the boiler, of 5½x2½ feet. An engine of this size may easily and safely be worked up to a higher than the rated power. Its cost is much less than that of a team of equal power, and the economy of fuel is an important consideration. A one-horse engine, costing $150 complete, would furnish steam enough to cook food for 100 head of cattle, besides power to cut the fodder, grind the grain, pulp the roots, elevate all the crops by means of the horse-fork, and pump water for all the purposes of the farm. The parts are all interchangeable, so that a damaged or worn out piece can be easily replaced with little cost. To set it in operation, it is only necessary to turn a cock, and any person who could run a thrashing-machine could learn to operate one of these simple engines. The cost of freight is estimated at 50 cts. per 100 lbs. per 100 miles, the weight of a complete one-horse engine and boiler is 345 lbs.

The Herbaceous Periwinkle.

Very likely if this were called the "Herbaceous Running Myrtle," most of our readers would have a better idea of the plant than by its correct name, as given at the head of the article, as the common Periwinkle, with evergreen stems and leaves (*Vinca minor*), is in many localities known as the "Running Myrtle." Why this plant, which bears no resemblance to a Myrtle in habit or flower, should have this name so generally attached to it in this country, where the true Myrtle is scarcely known, has long been a mystery to us. We can generally trace common names of plants to English usage, but we can nowhere find that the *Vinca* is called in England by any other name than Periwinkle, a name which comes from the Latin *pervinca*, to bind about, its flexible stems adapting it for use as garlands or chaplets. The little evergreen species is quite common in old gardens, and were it not so old-fashioned, it would be more used than it is, to carpet the ground under trees, a situation in which few plants will flourish, but one which this plant likes. But our object is to speak of the herbaceous species, (*Vinca herbacea*), which we had long known about, but had not been able to get until a year or two ago, when a correspondent sent it from England. We have this spring also received it from Thomas Meehan, whose extensive nurseries at Germantown, Pa., contain many things not to be found elsewhere. It is quite hardy with us, and proves to be an admirable little plant for the rock-work. Its numerous stems are prostrate, and run for only about nine inches; they are clothed with narrow oblong dark-green leaves, and bear, for some months in succession, little bright purple-blue flowers, which are rather smaller than those of the evergreen species. The engraving shows a branch and flower of the plant of the natural size.



THE LITTLE GIANT STEAM-ENGINE.—(*See page* 259.)

The Talinum.

There are some plants which, though not at all brilliant or showy, have a kind of quiet beauty and attractiveness of their own, and we are always glad to meet with them. This feeling may be due to some peculiarity of the plant itself, or because it awakens some pleasant associations, and in the case of Talinum, our fondness for it may be ascribed to both causes. We appreciate the brilliancy and beauty of the bedding plants, and enjoy a well planned and well kept design worked out in masses of brilliant flowers and foliage, but our admiration is tempered by the thought "here is something that has cost much time and labor to prepare;" if the plants were bought, we can know to a dollar what it cost to produce the effect, and we know that the first hard frost will make an end of it, and if the same effect is to be produced next year, the scenery must all be set anew. On a bright June morning, as we look around our rock-work, there is the little Talinum looking up with a smile of greeting, we recollect that this has happened every year for these five years, the little plant has made itself our friend, has become a part of our place, and we know that we shall find it there for five years to come—should we live so long, or for five times five years. It has come to know us, and we know just where to look for its yearly greeting—"Yes, you always were down on bedding plants"—our horticultural friends will say. Not at all. We are glad to see the show you can make with them, we like them—but do not *love* them. Of your "General Grant" or "Mountain of Snow" geraniums, you have probably a hundred of each; if one should die, you would not miss it, nor would you if ten, or even twenty, should get killed; so long as the rest grew to fill the gaps, you would not care. Your plants have no individuality any more than a soldier in the army, where, if one is shot down, the officer calls out "close up men," and thinks no more about it. If the little Talinum should disappear from its particular nook among the rocks, there would be a sad vacancy; it has out-lived hundreds, if not thousands of bedding plants, of which we only recollect that together they made a fine show, but what became of them, we have not the least remembrance. What we say with reference to the little Talinum is true of the hardy perennial plants in general, and though we would not discourage the use of bedding plants in their place, we would encourage the cultivation of the hardy plants—plants that have some individuality, and do not fail us year after year, but come again in the same place as sure as the seasons return. One may be fond of children in general, but he loves his own children, and this is somewhat our feeling in regard to tender bedding and hardy perennial plants. We are glad to know that plant-growers generally, are learning that they need not—as at one time promised to be the case—neglect perennial plants altogether, in order to make bedding plants useful. Having taken the Talinum as representing one of the good qualities of the hardy perennials—their endurance—let us describe it. The engraving of a flowering branch of the life size, will show that it is not very large. Its underground perennial stem or root-stock is short and thick; from this arises a stem some three or four inches long, which usually branches in a forking manner; the leaves are one to two inches long, fleshy and cylindrical, whence the name *T. teretifolium*—the terete-leaved or cylindrical-leaved Talinum. The flower-stalks are six inches or more high, and branch above to form an open flower cluster, each branch of which bears a bright rose-colored or pink-purple flower, not quite an inch across; the calyx of two and the corolla of five parts; stamens 15 or 20; the style 3-parted, and the ovary ripening into a many-seeded three-valved pod. Belonging to the Purslane Family, it has the way of some of the other members in not opening its flowers except in sunshine. It is not a very common plant, and in the Northern States is found in but few localities in Wisconsin and Pennsylvania, but is more

THE HERBACEOUS PERIWINKLE.—(*Vinca herbacea.*)

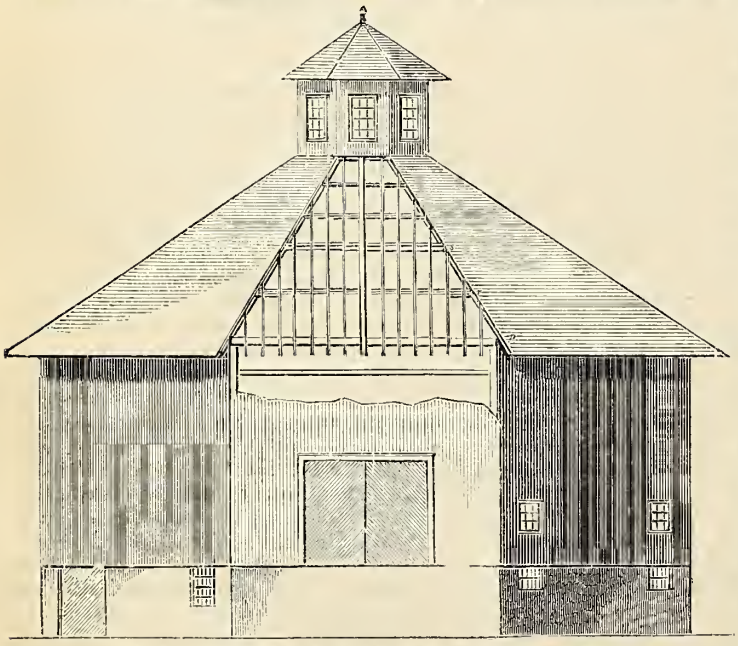


Fig. 5.—ELEVATION OF OCTAGON BARN.—(*See page* 258.)

abundant southward; the genus is mostly South American, this, and perhaps two others, being found within our borders. Westchester, Pa., the home of the late Doct. Darlington, is one of the principal localities for the Talinum, and perhaps some of our fondness for it is due to the enthusiasm and real love with which that great good man regarded this one of his favorite plants. In Westchester it is always found upon serpentine rocks, but it makes itself quite at home, in cultivation, upon sandstone. The origin of the name Talinum, is not made out, and as it has not any known meaning cannot be translated; but as it is round and smooth to speak, and not difficult to remember, it will answer for a common name quite as well as Magnolia, Geranium, or Rhododendron.

THE SMALL TALINUM.—(*Talinum teretifolium.*)

THE TWIN-FLOWERED NEMASTYLE.—(*Nemastylis geminiflora.*)

The Twin-flowered Nemastyle.

Those who are fortunate enough to possess that quaint old work, William Bartram's "Travels through North and South Carolina, Georgia, East and West Florida, etc."—travels commenced in 1773, and the account published in Dublin, 1793, will find facing p. 153, an engraving of a plant, which he calls *Ixia cœlestina*, with a brief description engraven on the copper plate. Beyond this he gives no account of the plant, as he appeared to think more of fine writing—at the present day we should call it "hifalutin"—than of accurate description, and all that he has to say about it is, "behold the azure fields of Cerulean Ixia!"—Later, Nuttall found the same plant in Arkansas, and finding that it did not agree with Ixia, gave it a new name, *Nemastylis*, from the Greek, meaning *thread* and *style*; as "Threadystyle" would not be very pleasant or descriptive, we think that "Nemastyle" will be a good enough name for the plants, when they get to be better known, as we are quite sure they will be. The specific name, *cœlestina*, may be translated in various ways, and it will answer to render it as "splendid." This species, the Splendid Nemastyle, is found in pine barrens from South Carolina to Florida and westward; the writer has seen it in abundance in Texas, forming broad patches of the richest blue. Nuttall discovered another species, common in Arkansas, the Indian Territory, and other parts of the West, to which he gave the name *N. geminiflora*, or the "Twin-flowered Nemastyle," which is the species here figured. The plants belong to the Iris Family, and their general appearance is shown in the engraving, which is of the natural size. Florists would class them in that miscellaneous collection called "bulbs," as they have solid bulbs or corms, about the size and shape of an onion "set." Their sword-shaped sheathing leaves are plaited, and much like those of *Tigridia*. The stem, from one to two feet high, bears a few smaller leaves, is branched above; at the ends of the branches is a two-leaved sheath, from which proceed in *N. cœlestina* one, and in *N. geminiflora*, two flowers, like that shown in the engraving. The chief difference between the two species being in the number of flowers, and in the last named the stigmas are much longer and the seeds rounder than in the other. The flowers in both are quite unlike those of the Iris, being nearly equally 6-parted; there are three distinct stamens, and the style has each of its three lobes parted into two long and thread-like stigmas. We had the bulbs of the Twin-flowered species in the open ground last winter, and the plants came up all right this spring, but as last winter was an exceptional one, we do not regard this as a proper test as to its hardiness. At all events, whether it proves hardy or not, it is a capital bulb for pots. We potted some bulbs in February, and the plants came into bloom in April, flowering, as they do in the wild state, for about two months. Though the individual flowers do not last long, they are produced in succession, and a pot well filled with the bulbs will be a pleasing object for a long time. We have not tried the Nemastyle as a house-plant, but have no doubt it will, like similar plants, do well in window culture. Our dealers should be on the look out for and procure the bulbs, which are quite abundant in some of the Southern and Southwestern States.

THE ROXBURY RUSSET APPLE.—We are eating in May the fruit of this old favorite variety of apple which was brought by the first settlers from Roxbury to Connecticut more than two hundred years ago. In the eastern part of the State it is called the Prentice Russet, probably from the name of the first settler who brought it out, and cultivated it. For

this region it is a winter apple hard to beat. It maintains its place in the orchards, notwithstanding the new varieties that have been introduced. It is grown upon almost every farm, where there is any orchard, and is more largely planted than any other variety. It is sure to be found in the cellars and in the stores as long as the old crop of apples lasts. The tree is vigorous and long lived, frequently lasting a hundred years or more. There is no sign of decay in the variety. It is in its best eating condition in the spring months, and keeps well under favorable conditions until July. It comes up from the cellar now a large, plump apple; crisp, juicy, and high flavored, good enough for an epicure. It is safe to plant three-fourths of any orchard in this region with this variety.

CONNECTICUT.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE VI.—LAUREL.

About this time, in the northern part of the country, Laurel is in blossom, and the hills are gay with it through the Alleghany region, and the districts which it particularly affects. By Laurel we mean *Kalmia;* not Rhododendron, which flowers later, and which we rarely see much of, in the wild state, except in the mountain region from the southern part of New York, bordering Pennsylvania, to Georgia. Still less do we mean what is called Laurel in England, which is a cherry. In every country some broad-leaved evergreen gets the name, which belongs originally and rightfully to the classical bay tree or Laurel, the *Laurus nobilis*, of the Mediterranean region, which we here never see, except the leaves of it in our boxes of dried prunes and figs, forming a layer over the top. Of our own Laurel, or *Kalmia*, there are two or three common kinds. There is the Sheep-Laurel or Lambkill, common in open grounds, which has a bad reputation, as the common name implies. The flowers of this are smaller and come earlier, but all we have to say of the larger and far more showy species, *Kalmia latifolia*, or broad-leaved Laurel, apply to this as well. The flowers are a curiosity, on account of the singular arrangement of the stamens. There are ten of these surrounding a single pistil. But, instead of standing within reach of it, their anthers are lodged in as many pouches in the side of the corolla. When the crumpled bud, shown in section in figure 1, opens into the shape of a deep saucer with a narrow bottom, of which one half is given in figure 2, the anthers, being held fast in these pouches, are carried outward and downward, and the slender filaments are strongly bent, like so many bows. They are, indeed, bent bows. If with the point of a pin you lift an anther out of its pouch, the filament straightens elastically with a jerk, and even bends over the other way. By watching the flowers, or covering them with gauze to keep off intruders, it is found that the anthers are never liberated of themselves, until the corolla begins to wither; and by that time the filaments have lost all their tension, and do not fly up at all. All this, while there is the stigma—a minute button at the top of the long slender, upright style: how is it ever to get any pollen?

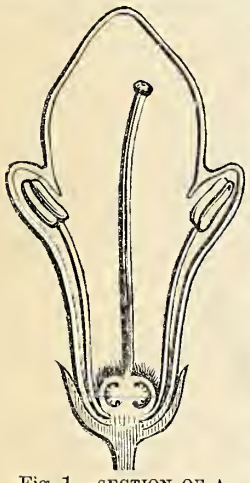


Fig. 1.—SECTION OF A FLOWER-BUD OF *Kalmia latifolia.*

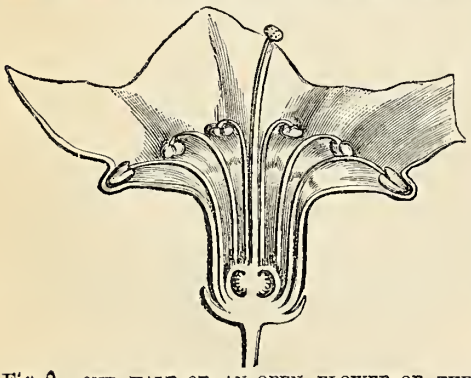


Fig. 2.—ONE HALF OF AN OPEN FLOWER OF THE *Kalmia*, SHOWING 6 OF THE 10 ANTHERS IN THEIR POUCHES.

Fig. 3.—ONE OF THE STAMENS MORE ENLARGED.

This case may be commended to the special attention of those who believe that insects are of no great use to flowers, and that cross-fertilization does not amount to much. So far as we can see, without insects, or some such visitors, these flowers are doomed to sterility. An insect as large as a bee, in rummaging the flower, is quite sure to set the stamens loose. When we do it ourselves, we see what happens. As each is let loose, a charge of pollen is projected inwards and upwards, in the direction of the stigma. The apparatus is worth inspecting. There are the ten sprung bows; upon the end which comes loose and springs up is the anther, composed of two oblong sacs (fig. 3), each open by a round hole at top, and within charged with pollen. Here is an exact equivalent to a child's pea-shooter. The filament answers to the piece of whalebone; the anther to a pair of bits of quill, or other short tubes attached to its summit; the pollen to the peas or small shot. A bee or wasp, probing the bottom of the cup of the blossom, brings about the discharge. In each flower ten shots are fired at the stigma—none too many, indeed, for the mark is small and the distance considerable. Some pollen is likely to hit. Figure 4 shows the appearance of the flower after all the shots have been discharged.

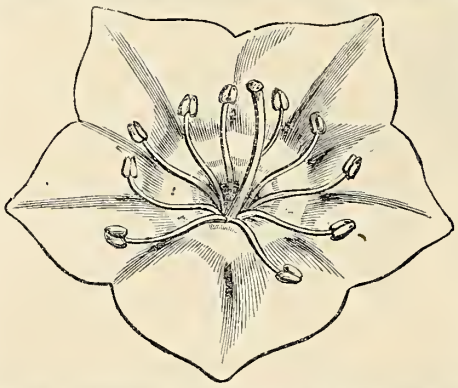


Fig. 4.—A FLOWER OF KALMIA, THE STAMENS OF WHICH ARE OUT OF THEIR SOCKETS, HAVING DONE THEIR WORK.

This contrivance is most ingenious, but one would say superfluous. A far simpler and more effectual arrangement would be to have the stamens so placed that the pollen should fall upon the stigma, if that were the proper destination of the pollen. This extraordinary structure in our Laurel flowers has been well known for more than a hundred years, a thing to be wondered at, a strange "freak of Nature." At length we have the explanation of the riddle. An accumulation of instances, such as these articles have been illustrating, confirm the happy suggestion that the pollen was meant, not for this stigma, but for some other, and under that suggestion even this curious case is clear. Having got the idea, the next thing was to see the actual operation. This was first observed by Prof. Beal, of Michigan, when a student at Cambridge. Bumble-bees were the principal visitors. "The bee, remaining on the wing, circles for a moment over each flower, thrusting his proboscis all round the ovary at the bottom; in doing this it jostles and lets off the springs, and receives upon the underside of the body and the legs successive discharges of pollen. Flying to another blossom, it brings its pollen-dusted body against the stigma, and commonly revolving on it as if on a pivot, while it sucks the nectar in the bottom of the flower-cup, liberates the ten bowed stamens, and receives fresh charges of pollen from that flower, while fertilizing it with the pollen of the preceding one."—*How Plants Behave*, page 34.

An acute correspondent has sent us a list of flowers which, in his opinion, are adapted for self-fertilization, and are practically self-fertilized. Some of them are just those which we were intending to take up in due time, as capital instances to the contrary. The others we may perhaps take in hand next month.

Market Gardening—Pluck vs. Capital.

BY PETER HENDERSON.

A correspondent in Iowa, "M.," writes: "I have read with interest, 'Gardening for Profit.' I am gardening this year, on a small scale, at this place, by way of practice. Please answer the following through the *American Agriculturist?* I have six acres of land within one mile of the market square of a town of 4,000 inhabitants. The ground is old, but has never been exhausted. Competition is not great. I have a profession which will give me a living for myself and family in the use of half my time. I have brains enough to comprehend theory, and nerve enough to drive the practice. I have no capital, but *pluck*. Can I succeed as a market gardener under these circumstances?"

"Pluck" will not stand in lieu of capital in beginning a business, where horses, wagons, glass, seeds and manures are required. To be sure, credit may be obtained to get these things, but I have always held to the opinion that no man has a right to ask credit of another if the business he is entering upon is an experiment, unless he can secure the creditor. All men that I have ever known, who have made the business a success, are those whose habits of industry and economy have enabled them to save a few hundreds or thousands of dollars, as the case may be, with which to begin. Capital—of not less than $500—and double that would be better, being a necessity in the case of "M."—our advice would be to let gardening alone, until, by dint of rigid economy, the necessary capital can be obtained; I see no reason whatever why he may not then succeed, *provided he does not attempt more than his capital will warrant.* This caution cannot be too often given, as an attempt to do too much is one of the most common errors in this, as in many other branches of business. Every year brings instances where thorough culture of a small area gives most wonderfully profitable results. One of my old foremen, Sylvester McAdam, cultivates, as a market garden, not more than five acres, on Jersey City Hights, only about three miles from New York City Hall; yet in the face of the dullest season we have ever experienced, his net profits, from the cultivation of these five acres in cabbage, lettuce, beets, and celery, have for the year ending April 1st, 1876, been nearly $5,000, or about $1,000 per acre; while some of his neighbors, with three or four times the area under cultivation, have hardly paid expenses. Mr. McAdam gives special care to the cultivation of celery, and sold the greater part of his crop in March and April, at very high prices—most of it at $4 and $5 per 100 roots—his *daily* wagon loads, during the month of March averaging $150 each. What is true of vegetables is equally true of fruits. More extended views on this subject are presented in an article in the May No. of the *American Agriculturist*, headed "Gardening as a Business," to which "M." and other inquirers are referred.

Apples without Blossoms.

Some nice apples were sent to us last fall from Maryland, from a tree which is rather famous in the region thereabout for bearing fruit year after year, but no blossom. We requested the most intelligent and obliging lady who sent the apples, to go to the

tree at the proper season and gather for us some of the blossoms, assuring her that blossoms would be found, without petals, and consequently making no show. The lady has now sent us the blossoms. The owner of the tree insisted there were none, but to satisfy his enquiring visitor took her to the tree, from which she gathered the green blossoms now before us. We had known several cases of the sort before, in Massachusetts and elsewhere, and the blossoms were just such as we expected. They have no petals, and so make no show; they have not even a stamen. In place of the petals there are sometimes, but not in all the flowers, some green scales, like calyx-lobes. So the petals have turned to sepals, or else disappeared. In place of stamens there are a dozen or two of pistils; so the stamens have turned into pistils. In the center there are the ordinary five combined pistils, nearly in their natural state. As the apples of last year ripened some seeds, though not many, these pistils must have had pollen brought them from neighboring trees, either by bees or by the wind. The only thing peculiar in the apples was that they had a two-story or even three-story core. This is explained by the flowers, with their supernumerary pistils. The proper core at the bottom comes from the five regular pistils; the cores above this come from those over them, which should have been stamens, but have by some unaccountable freak changed their sex. A. G.

Notes from the Pines.

We sometimes overshoot the mark. I did in the matter of labels, and in my efforts to secure great durability, quite defeated the very object for which I was working. For several years I had been accumulating a collection of Sedums and Sempervivums, procuring them from wherever I could find a plant, or a name not already in my collection. Finding that common labels were not sufficiently durable, I, two summers ago, determined to provide the plants with

Permanent Labels.

After a search, some locust boards were found and taken to the mill, where they were sawed into stakes of the desired size. These were treated in the usual way, by painting with white lead and writing on them with a common pencil. It was with much satisfaction that I looked upon the job when it was done, and thought there would be no more trouble from rotten labels. This spring I went to take up some plants that I had promised to a friend; the stakes were as sound as they were nearly two years ago, but not a single name could be read! The names resisted the weather for one winter, but the rains of a second washed off all the paint. The wood being so very hard, the paint did not sink into the pores, nor did the pencil impress the grain of the wood as it does that of a softer kind, and not a trace was left of the writing. Had I thought of anything but the durability of the wood itself, this difficulty might have been foreseen, but I had long set my heart on locust labels —I have them now, and they are as good as new! But my collection is in such confusion that it will take much time and labor to get it right again.... When "Probabilities" arrives at that point where he can predict the weather for a whole winter with the accuracy that he now does for a day, he will be a great help to horticulturists. There are many plants on the border between tender and hardy; if not covered in a hard winter they are sure to die, and if we prepare them for a severe winter, and it happens to be a mild one, they are as sure to be

Killed by Kindness.

I know of no way in which we can do like the hunter who "aimed to hit it if it was a deer, and miss it if it was a calf." I had a large bed of Tritomas, having procured all the named kinds I could hear of; as they went through the previous cold winter safely, they were covered in just the same manner for last winter; the result was that this spring I found that I had not a "Red-hot Poker" to my name—every one dead. I have heard of the loss of Pampas-grass and other similarly almost hardy things from the same cause—too warm a covering....One of the brightest little things we had this spring is

Azalea amoena,

one of the Indian Azaleas, which is generally kept as a greenhouse plant. Having heard that there was a plant in Greenwood Cemetery that had stood out for several years, I thought I would try it; the experience of last winter would prove nothing, but one of my plants was out during the very severe season of 1874–75, without any covering, and had not a bud injured. This is a capital plant for a cemetery, on account of its neat habit and its rose-purple flowers, which, though smaller, are much richer than those of any of the Belgian Azaleas. No doubt some of the other Indian varieties will be found hardy, when one can afford to risk his plants in the experiment....Trees are sometimes injured by an over-production of fruit, but I never before knew one to exhaust itself by producing an excess of that which is neither flower nor fruit. I had a large

Smoke-Tree—(*Rhus Cotinus,*)

often incorrectly called the Purple Fringe tree, which last summer produced such a volume of "smoke" as I have never seen equalled. It was so completely covered with the cloud that upon all but one small branch not a leaf was visible. It was explained in the *American Agriculturist* not very long ago, that this mass consists of abortive flower-stalks. Occasionally a cluster will produce a very few flowers, and the pedicels to these behave very much like other flower stalks, while the great mass of them are abortive, and having no flower or fruit to occupy themselves with, indulge in a sort of vegetative dissipation, branching in all directions, becoming several times longer than at first, and clothing themselves with abundant hairs. I feared that after such a demonstration the tree would be injured, and this spring nearly the whole top was quite dead. I attribute this chiefly to the fact that the leaves, being quite hidden, and of course densely shaded, were so shut out from the air and sunlight, that they were unable to perform their proper functions, and did not prepare any buds for another season. The trunk showing some signs of life, I cut away all the top, and it is now sprouting from the bare pole.

Changing the Bearing Year.

Every one who has anything to do with fruit trees, knows that a year of abundance is followed by a small crop, or none at all. This tendency is especially marked in the apple, in which the crop is so abundant one year, that the tree requires the second year to recuperate, and it does this so thoroughly, and makes such abundant preparation for the next crop, that there is another year of over-bearing, and this alternation goes on. A friend writes me that there is such a promise of apples in his neighborhood, that he fears that fruit will be very low, and that he would like to change the bearing year of half of his trees, and asks if by sacrificing the present crop by removing the fruit, he can not be fairly sure of a crop next year from these trees, instead of being, as is likely, almost without apples. My fruit trees are not numerous enough to be called an orchard, but they make a very fair sized fruit garden, and as I have been accustomed to thin very freely, I have a fair crop each year. I have not had occasion to change the bearing year, but had always supposed that this was one of those things so frequently done, that all who had written about fruit culture would mention it. When a question comes to me that I cannot answer from my own experience or observation, I quote the questioner the best available authority, and to do this I turned to one of the best fruit books at hand, and found it was not even alluded to; the next work gave much space to the subject of thinning, but nothing about the effect of removing all the fruit, and so on through several of the most recent works. It was not until I reached Downing, which being a large work, was in another section of my library, that I found the matter mentioned. Downing says: "The bearing year of an apple-tree, or of a whole orchard, may be changed by picking off the fruit when the trees first show good crops, allowing it to remain only in the alternate seasons which we wish to make the bearing year." It will be seen that this refers to changing the year only when the trees begin to bear. I would like to ask those who have tried it upon old trees, how it has succeeded. Of course there is an advantage in making the change upon young trees, as there is but comparatively little fruit to remove, and it can be done much more cheaply than upon old trees. This brings up the question, is the advantage gained by changing the bearing year in old trees, sufficient to pay for the cost of doing it? Of course the sooner the fruit is removed after it is set, the better it will be for the tree.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

A Home of Our Own.

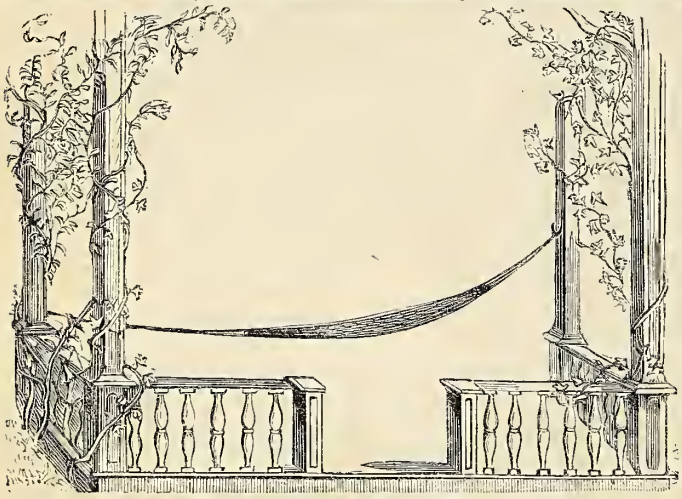
Home is not simply the place where we happen to dwell, though we often use the term in this sense, but it is the place where we feel at rest from outward interference, at our ease with respect to the people around us, and where we have a right to the things we use. One who has never been deprived of such a refuge and resting-place, cannot fully realize the meaning of the familiar line of the dear old song: "Be it ever so humble, there's no place like home." Whether one person alone can make and keep a home, with only one chair at the fireside, and only one plate laid for dinner, and with no companion to bid "good morning" and "good night," whether there can be a full home feeling where the house walls and the door yard soil are the property of an outsider; questions like these admit of discussion. But home is more and more home in proportion as it contains loving and beloved friends, old or young, and in proportion as we feel secure of undisturbed possession.

There may be great comfort in a rented house and grounds, and sometimes there are good reasons why it is better to accept of these and make the best home possible with them, or with even a garret in a house full of "other folks," than to buy a bit of land and build a house, or to purchase a suitable house already built. A rented home is, after all, only a place to stay in for a little while, and few have the courage or the generosity to make any permanent improvements on a rented place. A tenant grumbles over disadvantages which he would not mind if he had only himself to blame for them. Furniture is broken or marred, and books and pictures are defaced by removals. "Three moves are as bad as a fire," is a common saying. It is discouraging to the enterprise of housekeeper and household provider to have only a sense of stopping for a little while in the place they call home. If they owned the place they would mend this and improve that. They would work for future enjoyment as well as for present comfort, and wait for time to show the result of their labors. They would plant centennial trees and wedding anniversary vines and birth-day roses.

Tastes differ. Some people can hardly see how a man of wealth, who "of course might do just as he liked," can choose to buy a ready-built house and even leave the selection and arrangement of the inside furniture to an agent. But the man they criticise is perhaps so occupied with other plans and employments that it would only bore him to have charge of the details of house-building. Another person can hardly begin back near enough to the beginning of things. He would begin his home-making upon the prairie or in the unbroken forest, and would gladly plant his own mountains and dig his own lakes in such spots as would suit his individual taste. There is a great deal of conceit in all this. A person who has a taste for bay-windows and balconies will imagine that he knows just what kind of a house he wants, though he has no ideas of convenience and comfort in the inside

arrangement. Some men suppose that only women are so silly as this, but I know of men as well as women who in almost all of their work, plan the ruffle to the shirt before they know where the shirt itself is coming from.

The exterior of the house I would build has never presented itself very clearly to my mind, but by observing the mistakes and the successes of other house-builders, I have come to consider myself competent to make a few suggestions to young house-builders. In the first place I wish I could convince of their mistake some of those who are paying out their earnings for house rent, year after year, in the belief that they cannot afford to build or buy a house. Their notions are too high. By saving carefully with a purpose to obtain a home of their own, they could soon get money enough to begin to pay for it. By beginning small, if they build, and by attending first to the essentials of comfort and convenience, leaving ornament to the last, they could gradually secure a good home.



HOW TO SLING A HAMMOCK.

The Baby's Journey.

He is full of eagerness to start—to have on his cap and cloak, and get "out doors" anywhere, but a journey is not altogether happyfying to the little one. Every one knows the misery of a crying child in a railroad car. We all know, too, how wearing to the nervous system is a long journey sometimes, and one which is not long to us may be very wearisome to a baby. So we ought to plan from the outset to make the journey as easy and comfortable as possible for the child. Its clothing should be arranged with regard to this. A hat or cap which is easily knocked over the eyes, is less comfortable than a soft little bonnet. A soft cap can be securely tied on, but a hat with a brim will pretty surely prove a source of annoyance. If the little one's eyes are weak, some protection from a glare of light should be given, by the cap visor or a veil or sun-bonnet. It is not safe to disregard a child's complaints or signs of uneasiness on account of its eyes.

If the baby is to enjoy its journey, it must be dressed in accordance with the weather. It seems unnecessary to say this, but I remember seeing two little girls, under seven years of age, come into a city library with their mother, on a bitter cold day, the week before Christmas two years ago, wearing fur caps and short fur sacks, and silk dresses, and with no clothing below the knees except thin cotton stockings and kid shoes. Such thoughtless exposure is growing less common as knowledge increases. It is not often that children are dressed too warm, but this is sometimes the case, and the evil is quite as great as when too little clothing is used. In hot summer weather, babies should be burdened with as little clothing as possible, and that little should be loose and easy.

The baby, when traveling, will tire out very soon if some one is constantly trying to amuse it by calling its attention to various objects. Very simple things interest babies, and it is better that they should be only tranquil and contented than to be mentally exercised with any stronger emotions. It is tiresome to almost any one to look from a car window long, however beautiful the landscape. The rapid changes and the great number of interesting objects, weary one. One thing that makes babies cross when traveling is, the indiscriminate cramming to which their stomachs are subjected. If a baby is tired—simply tired and nothing more—it must have something to eat. It must eat if it is sleepy, or cold, or too warm, or if it already has a stomach-ache from too much eating. The plain crust of bread that might perhaps be its portion at home, would never do on a journey, of course, so cookies are probably offered to appease its supposed hunger, and if these will not do, very likely there are candies in reserve. If ever a baby needs plain food, it is when on a journey. At some hotel tables, it seems impossible to give a young child a decent meal, for sometimes one cannot even find plainly cooked good potatoes or sweet, light bread. With either of these and good milk, any baby ought to make a comfortable meal, but meat is too difficult of mastication and too strong food for babies, except in very small quantities; and cake and pastry do more harm than good. Ripe fruit properly given, does not hurt quite young babies. It should not be very sour, and should be given without sugar and with coarse seeds and skin removed, and should be sufficiently soft (of course it should be *ripe*), to allow of an easy separation of its particles in the mouth. Too large a proportion of fine crackers will produce constipation, and cakes, candies, and sugar have the same tendency, and all tend to make the child uneasy and cross. When the journey is sufficiently short—in time rather than in distance—it is best to take at least a part of the baby's luncheon from home. Plain light biscuits, or graham crackers, mixed with milk, are very good for this purpose. Nothing sticky or greasy should be given the baby, or any small child, to eat in its hand when traveling. The condensed milk made in American factories, is recommended by those who understand the subject, as safer for a young babe who must have regular rations of milk, than such specimens of milk as one might chance to buy in various places.

It is an excellent plan to take along some of the baby's familiar playthings. Both mother and child find it wearisome enough to wait in strange rooms where there is nothing that the baby may take to play with. At the houses of friends the case is scarcely better, for an active child will surely get into mischief if it finds nothing upon which it may legitimately employ its powers. Before brackets became so fashionable, it was often a very trying ordeal for a mother to spend an afternoon with her babe in a childless friend's parlor, so many small ornaments were lying about within a child's reach. It is sometimes very annoying to a mother, and fretting to a child to have nothing at all within reach which the baby may take to play with. Every hospitable matron ought to keep something on hand to meet such emergencies—a strong doll, or a clean little cart, a box of building blocks, or a set of cheap dishes. But every mother who takes a journey with her baby, would do well to go equipped with a few small playthings. If she values her own peace as well as that of her child, and if she would not make her visits to her friends inflictions grievous to be borne, she must preserve the baby's regular healthy habits, giving it comfortable clothing, plain nourishing food, plenty of wholesome sleep, and very little excitement of any kind.

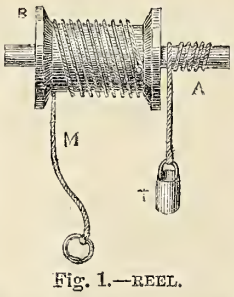
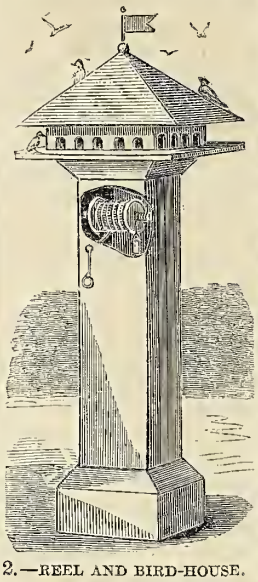


Fig. 1.—REEL.

One Way to Mend the Boiler.

Sometimes it happens that a boiler begins to leak when filled with clothes and suds. This is very inconvenient, especially if the leak is of sufficient magnitude to affect the fire and keep it low. Such leaks are usually in the seams of the boiler, along the joint between the bottom and side. To remedy it, hold the wet clothes away from that side of the boiler with your clothes stick, while you sift from your hand a spoonful or more of fine corn-meal. This will settle to the bottom of the boiler and be carried into the crack where it will swell in such a way as to stop the leak. It does no injury to the clothes, as it all rinses away easily. Such mending as this may keep the boiler from leaking again for two or three weeks if the meal is not too carefully wiped away from the crack in cleaning the boiler. When a hole is found in the bottom of the boiler, and it is not convenient to have it properly mended, it can be temporarily prepared for use by pulling a small rag into the hole by one corner, to fill up the opening. With water in the boiler, the fire does not burn away the rag so as to allow the water to escape. Leaks in the seams of vessels are not easily mended without a soldering iron; but in the absence of that useful tool a piece of tongs or poker, or other small rod of wrought iron, long enough to be made red hot, can be used in connection with soldering fluid described here a few months ago. The work done by such a rude tool will not be of the most finished description, but it will answer the purpose of simply stopping the leak, as we have lately proved.



2.—REEL AND BIRD-HOUSE.

Some Household Conveniences.

BY L. D. SNOOK, YATES CO., N. Y.

A SELF-WINDING CLOTHES LINE.—A clothes line well cared for will last very much longer than one exposed to the weather, and though it is but very little trouble to take in a line, it is often left out from one week to another to the great annoyance of those who have to pass across the place it occupies. It is not difficult to contrive an affair which shall be self-acting, and will wind up the line as soon as it is loosened. Figure 1 shows a large wooden spool with an axle or journals; the spool *B* is about six inches, and the journals about one inch in diameter, the journal *A* being four inches long, while the other is but one inch in length. The ends of these rest in holes in supports which are not here shown. A small strong cord is fastened to and wound around the journal *A*, and there is attached to the cord a weight *T*, of about

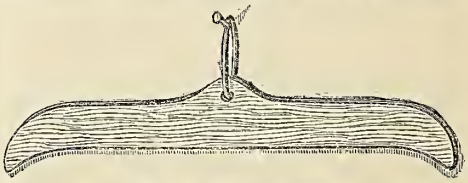


Fig. 3.—COAT-HANGER.

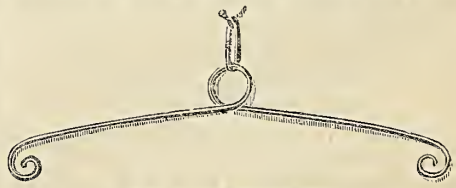


Fig. 4.—VEST-HANGER.

six pounds. A common cotton or hemp clothes line is shown at *M*, this is fastened by one end to the spool, and at the other end has an iron ring, or

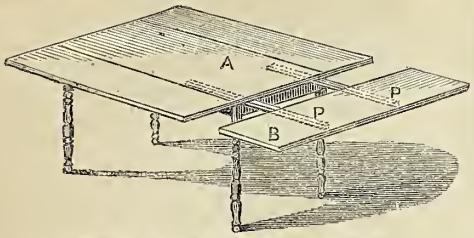


Fig. 5.—EXTRA LEAF FOR TABLE.

a stick will answer. When the weight *T* falls three inches, the spool will revolve once, and wind up 18 inches of the line; if it falls five feet it will wind up 30 feet of line. For convenience, both the clothes line and that carrying the weight, are shown wound up. In use when the clothes line is wound up on the spool, the weighted line will be unwound, and the weight at the floor. To stretch the line, take hold of the ring and walk to the point where it is to be attached; this will unwind the line and wind up the weight. When the clothes are taken down, unhitch the line, and the descent of the weight will wind it up at once, and it will be housed without trouble. The spool may be placed in any convenient shed or out-building, or a column may be constructed for it which will at the same time answer as a support for a bird house, as in figure 2.

HANGING UP COATS AND VESTS.—If coats are hung up by the loop attached to the collar, they will, especially if heavy, and not frequently worn, become stretched out of shape, and when put on show an unpleasant distortion. To avoid this, careful persons use some kind of a hanger, which will keep the back and shoulders in shape. A very common expedient is to use a portion of a barrel hoop, but it is not so suitable as the one shown in figure 3, which is made from a piece of ¾-inch board 5 inches wide. The length will be from 16 to 22 inches, according to the size of the garment, it being an inch longer than the distance from the outside of one arm to the outside of the other, measured either across the chest or the back. A heavy wire, bent as in figure 4, answers to hang up vests. Supports for both vests and coats, made of heavy copper wire, are sold by the street venders in cities, but any one can make equally useful, if less showy ones, out of ordinary fence or bailing wire.

EXTENSION LEAF FOR A COMMON TABLE.—It is often desirable to extend or enlarge a common side-leaf table, and this may be readily done by a contrivance shown in figure 5. This shows a board, *B*, about 18 inches wide, and as long as the table is wide. Two hard wood sticks, *P*, *P*, one inch square, and three feet long, are secured to the leaf *B* by screws; two holes one inch square are made in the end close under top *A*, through which the supports *P*, *P*, pass as indicated by dotted lines. This is a very convenient method of attaching a portable leaf, the only objection being the disfigurement of the table by the two square holes. To avoid this we would suggest the plan shown in figure 6, in which *W*, *W*, are the side-leaves, and *E* the extra or portable leaf, which is connected with the table by swinging arms *R*, *R*, loosely attached to leaf *E*, each by one small bolt, placed near *X*, *X*, in the figure; when in use, the arms *R*, *R*, are in the position indicated by dotted lines, when not in use, fold lengthwise of leaf and occupy but little room.

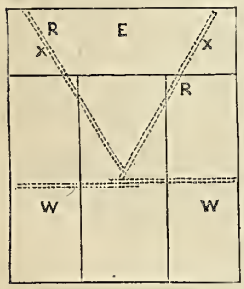


Fig. 6.—TABLE EXTENDED.

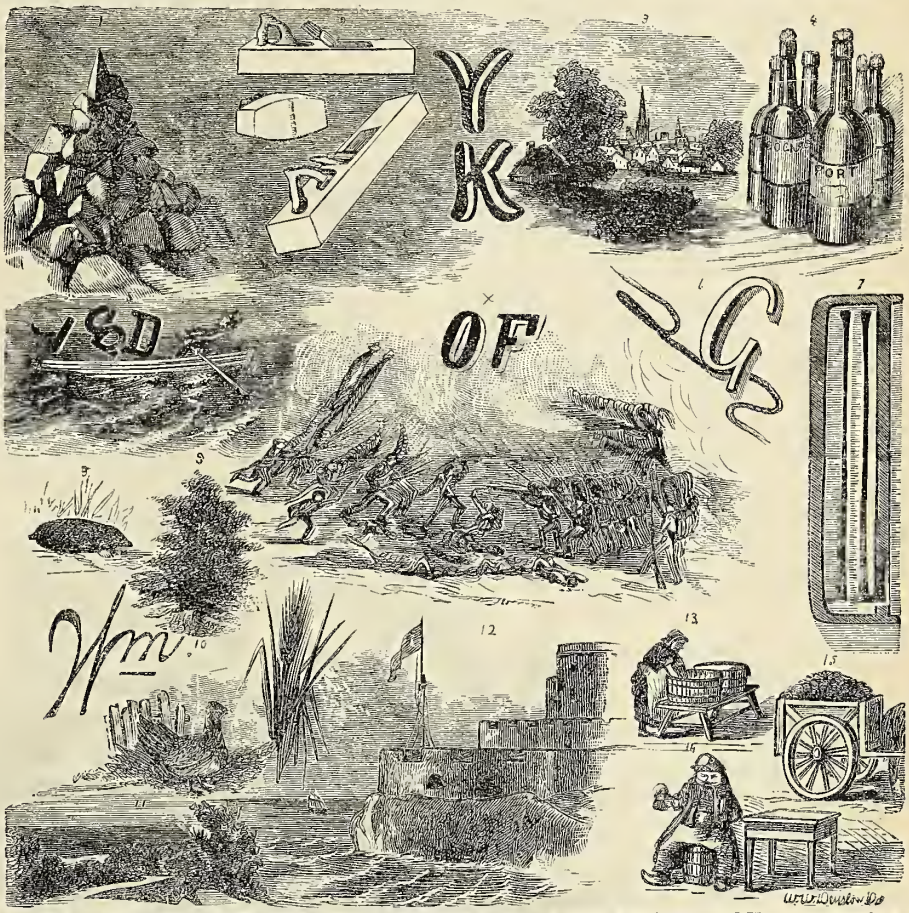
A Hammock in the Country.

Of course those farmers who think that even the noonday rest for themselves, their men, and their animals, is a waste of time, will not regard a hammock upon their places as any other than a sign of indolence. Still we have noticed that these men who have no mercy upon themselves, are very ready to provide comforts for others, and we do not know of anything upon a country place that will afford more amusement for children, or more comfort to the women-folks, or the "company," as guests are often called, than a well slung hammock. We had always supposed that those light but strong hammocks imported from Mexico or Central America, made from some coarse fibre that looks like manilla, were very expensive, until the other day, when we learned that a very good one could be bought for $2.50 or $3, while longer and more ornamental ones, though really no better or stronger, cost much higher. A hammock should be hung where there is a good afternoon shade, and if intended in part for children's use, should be hung so low that small children can get into it by the aid of a box or low stool, and over soft ground, so that the numerous tumbles that are probable will be harmless. If no other place is available, it may be hung between the pillars of a shady veranda, a place well enough for the older people who use it, but undesirable for children, on account of the lack of a soft turf, as well as for the noise which accompanies its use by the youngsters. When children only are to use the hammock, the manner of hanging it is not important, but if provided for the use of grown persons, it should then be so suspended that the head will always be considerably higher than the foot, and much of the comfort of the one who uses this, depends upon a proper observance of this fact. The engraving given on the opposite page, shows the hammock of a friend who, having no more suitable place, suspends it from the columns of his veranda. The hook which supports the head end, is 6¼ ft. from the floor, and that for the foot end is 3¾ ft., and these proportions should be observed wherever it may be hung, to secure the most desirable curve for the ease of the occupant. Another point to be observed; the head end is fastened to the hook by a rope less than a foot long—just enough to properly attach it, while at the foot is a rope 4½ ft. long. This gives the greatest freedom for swinging the lower part of the body, while the head moves but little. This is a point which cannot be observed in a hammock for children, who think more of it as a swing than as a place for comfortable repose. When trees serve for supports, ample provision should be made to prevent injury to the bark, by means of stout canvas or heavy bagging between the ropes to which it is suspended and the bark. If the hanging be so arranged that the hammock can be taken in during long storms, it will last much longer.

BOYS & GIRLS' COLUMNS.

To Every Boy and Girl.

I wish to say something to every boy and girl old enough to write, and the reason of my saying it is this. To make things a little lively among you, I offered some prizes for the best stories about dogs. When the stories had all been read, and the prizes determined upon, I published the names of those who were to receive them. Before I had sent the books, I received a postal card which read: "I now take the liberty to write and tell you that you had better let some one else have the prize for the dog story, as —— —— of —— is — instead of — years old." I leave the names and figures blank. You may suppose that I felt astonished, and then felt sad that any boy or girl should take the advantage of the old Doctor by giving a wrong age. Indeed, I could not believe it, and was about to ask the writer of this postal card more about the matter, and what proof he or she had that the age had been wrongly given by several years, and who do you suppose this "I" was who took "the liberty to write"?—why it was "Yours truly, A Reader of the *American Agriculturist*!" Just look at it. Here is some one, whether boy or girl, man or woman, I do not know, only some one who reads the *American Agriculturist*, who accuses another of giving a wrong age in order to get a prize. In fact charges a boy or girl with writing a *lie*, and refuses to give his or her own name. Now, children, I don't like this. I might say a great deal about it, but I will now only just ask you to look and see how unfair it is. A person who conceals his or her name, accuses another by name of a very wrong act. I do not wish to say anything harsh, for the card may have been written by some young person who did not think how unfair it was, but if written by one old enough to know better, I should say that the writing of it was as bad as the act of which it accuses, and by name another.



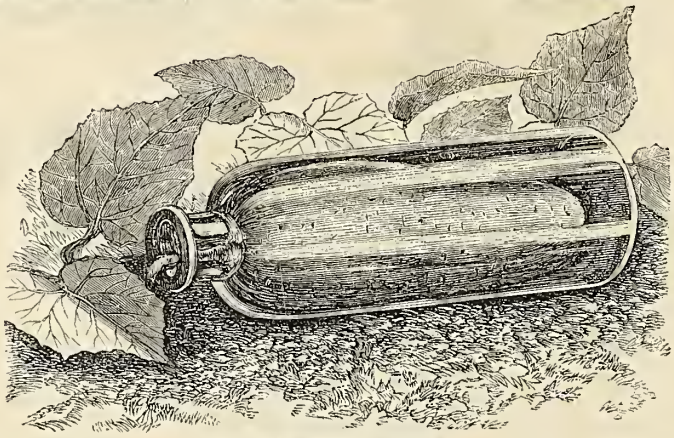
No. 453.—Illustrated Rebus.—It is very proper that in July of the Centennial Year you should have a rebus that is especially related to American history. In the above you will find pictorial representations of about a dozen important battles of the war of the Revolution. Study up your school histories, and find them out.

Now what I wish to say to you is this. I wish you—every one of you old enough to write or to read what is here written—to resolve at once—to promise yourselves—that you will never write anything that you are *unwilling to sign*. Never make a charge against another that you are not sure you can prove, and to which you are not willing to sign your own name. The writer of this card should let this be his or her last. As to the one accused of giving a wrong age, the prize has gone, and if the one who received it obtained it by unfair means, very little pleasure will come of it. Every time it is seen it will be a reminder of wrong doing, and will be very soon put out of sight. Never, youngsters, write to any one, especially if the writing is about a third person, without signing your full name. You may think that I do it when I sign myself "The Doctor," but that is different, I do not do it for concealment, and the publishers of the *American Agriculturist* are responsible for what appears in the paper, whether it is signed or not. I use the name because it is shorter and more familiar than my own, and it is the custom for those who write for papers to take such names, but the real one can be had for the asking, and the case is quite different from the one I have mentioned.

"THE DOCTOR."

How Did It Get There?

"G. T.," writing from Bergen, N. J., says: "I went to the city a few days ago with my uncle, who had some business in a large store where they import pickles and preserved fruits from France. There was a beautiful show of such things upon a large stand, at the top of which was something that puzzled me. It was a glass globe, like those you see in the drug-stores filled with colored liquids, and inside of it was a melon pickled or preserved in some way. The melon seemed nearly as large as my head, but the neck to the globe did not look larger than that of a common jug. I asked how they got it into the bottle, and was told that it grew there. It was a very curious thing, and I should like to know *how* it got there."—Bottles with curious things inside of them used to be more common than they are now. In the times when we depended upon the whales for oil to burn in our lamps, whaling ships went upon voyages of two, three, or more years. On a whaling cruise the men sometimes were very busy and had hard work, but for most of the voyage they had a great deal of idle time, and the sailors amused themselves with making little things that took a great deal of patient, slow work. Whale ships often brought home the most wonderful carvings on whale's teeth, which are a very hard kind of ivory, and the most curious chains whittled from a stick of wood, but the most wonderful things made by these sailors was a reel in a bottle. In a large phial or small bottle, with a neck scarcely larger than a lead-pencil, would be a delicate reel, upon which were wound silks of different colors; the reel filling the whole bottle; sometimes a wooden plug was put into the neck of the bottle in place of a cork, and then a sort of cross piece or key put into the lower end of the plug to keep it from coming out. Some of these were really wonderful affairs, but they could all be explained when we knew that those who made them had a plenty of time and patience; it could be seen how all the parts could be put together if one was not in a hurry, by the aid of wires and long pincers made from wires. The discovery of petroleum put an end to most of such time-consuming work as putting reels into bottles; when it was found that oil for lamps could be had easier, whales were left in peace; few ships now go to hunt whales, and as the sailors on other voyages are kept busy, we find that the crop of wonderful reels in wonderful bottles has failed of late years. A few years ago another set of bottle wonders came up, and we cannot tell how many specimens of fruits of various kinds nearly filling bottles of various sorts, sizes, and shapes, have been brought to the office of the *American Agriculturist* as curiosities. We have had cucumbers, any quantity of them, apples, and other fruits in bottles, the necks of which were so very small that they were very puzzling to persons who did not *stop to think*. We never had a melon in a globe, such as "G. T." mentions, but this is no more wonderful than a cucumber in a bottle, such as is shown in the engraving, and this also shows how the trick is done, not only with the cucumber, but with our young friend's melon. The cucumber, melon, apple, or whatever may be the fruit, is passed into the bottle or globe, and when once there, it has nothing to do but grow, as its food is carried to it by the stem to which it remains fastened. Indeed the cucumber or melon would no doubt grow more rapidly within the bottle than without; in England they grow cucumbers under glass in hot-beds or greenhouses almost entirely—and it used to be a trick of the gardeners, in order to get long, straight and tender cucumbers, to slip a large glass tube, open at both ends, over the growing fruit. This experiment with the cucumber is one that any boy can try, if he wishes; it will be well to pick off all the other cucumbers from that branch of the vine, and leave only the one in the bottle; of course the stem beyond this particular cucumber must be nipped off, but outside of the bottle as many leaves as possible should be kept on. When the cucumber fills the bottle it should be cut from the stem, else it will burst the bottle. Some years ago we saw a common 8-sided ink-bottle into which a young apple had been thrust; the apple filled the bottle, then broke a hole in its side, through which a part of the fruit grew in a curious and mis-shapen mass. Of course such fruits will decay if not preserved. The bottle may be filled with alcohol, or strong brine, made with as much salt as the water will dissolve. In either case, if the fruit nearly fills the bottle, the alcohol or brine, after three or four days, should be poured off, and some fresh put in its place.



CUCUMBER IN A BOTTLE.

Aunt Sue's Puzzle-Box.

CHARADE.

First.

A tree that grows in sultry climes,
Bears neither cocoanuts nor limes,
But still a fruit we all like well,
Relished alike by sweep and belle.

Second.

My second gives a name well known
To those who are to learning prone;
This man, a chemist very wise,
Has left a book that students prize.

Whole.

My whole's possessed by ev'ry thing;
So say the wise men, they who bring
Us knowledge learned in Nature's book,
This may be seen by all who look. HENRY.

DOUBLE ACROSTIC.

The initials and finals name two reptiles.

1. Slipperwort. 2. Belonging to the shoulder. 3. A tool. 4. Persian priests. 5. A germ. 6. A Southern State. 7. The original name of ant. 8. An American lake. 9. A magician.

ANAGRAMS.

1. Hunt red blots.
2. Teach men scorn.
3. Now skip harm.
4. No pure sea.
5. Black rye, sir.
6. Cel, yet in line.
7. O! we assure.
8. Dream not, dance.
9. Real hares.
10. Can't sing here.

TRANSPOSITIONS.

(Fill the following blanks with the same words transposed.)

1. It is very —— we get —— to give perfect satisfaction.
2. Tell Jack to —— and put down that ——.
3. Don't touch that —— you will —— it.
4. You may carry away all —— the ——.
5. He was after those ——; it was enough to —— him! A. L. FRED.

SQUARE WORD.

1. A pronoun. 2. The deck of a ship. 3. The Turkish college of ministers, lawyers and judges. 4. A certain Italian. 5. Brief periods. JOHNNY SMITH.

DIAMOND PUZZLE.

The center letters read downwards and across form a river.—1. Part of a door. 2. A boy's nickname. 3. Planets. 4. To reel. 5. A river. 6. A city. 7. Fastenings. 8. A song. 9. A letter. NIP.

DECAPITATIONS.

(Fill the second blank with the word belonging to the first blank, beheaded.)

1. He had a large —— in N. Y. ——.
2. I hope he will not —— in his purpose, and —— his mind.
3. The birds took —— as soon as it was ——.
4. That —— ring looks like a pretty —— one.
5. She said that the —— she wore she did not ——.
6. I do not see the —— sign of a storm in the ——.

F. E. G.

CROSS WORD.

My first is in bramble but not in bush,
My next is in haul but not in push,
My third is in far but not in nigh,
My fourth is in cake but not in pie,
My fifth is in street but not in lane,
My sixth is in snow but not in rain,
My seventh is in rake but not in hoe,
My eighth is in high but not in low,
My ninth is in hand but not in fist,
My whole is a well-known humorist.

GEORGE H. FULLER.

PI.

Ni Stewminrest's oraly shall,
Bored ni hetir finicalspot,
S'langned eantine platerse dosot
Rof eth sep'lope grith dan dogo. WHITEHIT.

ANSWERS TO PUZZLES IN THE MAY NUMBER.

ANAGRAMS.—1. Breastplate. 2. Peninsula. 3. Proverbially. 4. Traditional. 5. Unostentations. 6. Overboard. 7. Manufactories. 8. Synagogues. 9. Epidemical. 10. Worm-eaten.

METAGRAM.—Block, clock, flock, lock, hock.

DECAPITATIONS.—1. Lash, ash. 2. Goat, oat. 3. Fear, ear. 4. Face, ace.

SQUARE WORD.

T O D D Y
O P E R A
D E B A R
D R A W N
Y A R N S

DIAMOND PUZZLE.

M
L I D
M O N A D
C H A N G E S
M I N N E S O T A
P U L S A T E
K N O C K
A T E
A

CROSS WORD.

Hindostan.

CURTAILMENTS. — 1. Tone, ton. 2. Not, no. 3. Spite, spit. 4. Plant, plan. 5. Cane, can.

NUMERICAL ENIGMA. — A stitch in time saves nine.

PI. — "Why do you show favor to your enemies instead of destroying them?" said a chieftain to the Emperor Sigismund. "Do I not destroy my enemies by making them my friends?" was the Emperor's noble reply.

HIDDEN CAPES.—1. Ann. 2. Cod. 3. Charles. 4. Look-out. 5. Henry. 6. May. 7. Horn. 8. Farewell.

POSITIVE AND COMPARATIVE.—1. Lake, lucre. 2. Ham, hammer. 3. You, ewer. 4. Inn, inner. 5. Seed, cedar. 6. Rap, wrapper.

Thanks, for letters, *original* puzzles, etc., to Rosa Brodie, A. L. P., E. P. Lowe, John W. Wheatley, J. C. Lawson, B. F. Beck, C. F. Giles, Alice S. Paul, and to the little one who forgot to sign her name, but whose "Granpa takes the *American Agriculturist*," and who has "two pieces done" of the muslin tidy, and uses "red worsted," F. J. P., "12 years," (though I do not quite see the sense of signing oneself "as ever 12 years,") Mira C. G., Jimmy John, D. M. W. (it always pleases me to hear that "even papa" takes an interest in the Puzzle Box), P. A. W., E. W.—Correspondents need not hope to see their puzzles, nor to receive an answer "in the next number"; because my communications have to be sent to 245 Broadway, six weeks before the reader sees them published. I merely mention this fact, that some of my little friends may not think I am neglecting them entirely.

AMANDA L. P.—You can either "*dig out*" the answer to the alphabetical arithmetic by experimenting with the figures you suppose the letters to represent; or you ——take the letters and try to form a sentence with them, ——grammatically, and then see if they "come right" in the sum. I cannot tell you *how* to guess them any more than I could tell you how to guess a conundrum.

KATE BOARDMAN.—Please send me the address to which I can return the picture you were kind enough to send.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

A Story of a Frog.

Far away over the ocean, in the sunny land of France, there is a beautiful little lake, on the borders of which grow many trees, tall poplars and elms, but especially willows; of these there are so many that the people there call it "The Lake of the Weeping Willows." Flags and grasses and many wild flowers fringe its margins, and through the clear water the fish may be seen darting hither and thither. Down toward the marshy end, the frogs croak all night, and when the sun shines warm, hundreds of little tadpoles bask and play in the shallow water. It is about one of these little tadpoles that I am going to tell you. His name was *Rana esculenta*, which means "a frog which can be eaten"; a strange name for a little tadpole, but you will see how it suits him before we have done with the story.

Rana had a slender tail, a large round head, an immense mouth, two bright eyes, and—that was all. He had been so often told that he was handsome by his brothers and sisters, and that he was smart by his mother, that he thought there was nobody else so wise and so pretty in the whole lake. True, he was only an inch long, but was he not growing all the time, and had he not felt some strange lumps on each side of his tail, which his mother said were legs growing out? So Rana got all the nicest little bits of the tenderest water-plants for himself, for you must know that, while the grown frogs eat insects and other animal food, the tadpoles are brought up on vegetables. He was petted so much that he became unkind to his brothers and sisters, and saucy to his mother, until at last no one cared to be with him. But he only kept on stuffing himself with the best food, and admiring his own elegant style of swimming and his beautiful form. All he could see of his form, however, was the end of his tail, which daily seemed to grow shorter and shorter, while his legs grew longer and longer.

One day, while he was speaking very impudently to his mother, because she would not indulge him in some

whim, the old frog gave a great leap and disappeared from sight. Rana could not tell what had become of her; he swam here and there, looking for her in vain. While he rested a moment to think where she *could* have gone, the water all at once darkened above him, and looking up, saw a hungry fish, with its mouth wide open, just ready to swallow him whole. He darted away in an instant, and hid himself under a large stone, where he stayed until he saw his mother suddenly plunge down from above.

"Where have you been?" he cried, coming out to meet her. "You left me all alone, and a big fish nearly ate me up. I suppose you were hiding and would not come to help me!"—"I was not here at all, I was on land," said his mother.—"Do you mean at the other end of the pond?" asked Rana.—"No, my dear. I leaped out of the water on to the land. The air is very fresh there this morning."—"I don't understand you at all," said the tadpole, impatiently. "What is this talk about land and air? You don't expect me to believe there is anything outside of this place where we live, do you?"—"No," said his mother, "I don't expect you to believe anything I tell you, but when you are older, you will find out for yourself."

Now, though Rana had said he did not believe it, he could not help thinking of what his mother had told him, and longing to see if it was true. As time went on, his tail completely disappeared, his hind-legs grew to their full length, and so did his fore-legs, his back became green, with yellow stripes; in fact, he was no longer a tadpole, but a little frog, growing larger every day. Now that he had legs like his mother, he resolved to try if he, too, could get to land; so going one day to the edge of the pond, he gave a great leap, and to his surprise found himself on the solid earth. He looked around and saw many strange things; the fields and woods, and the waving willows were all new and wonderful, and to his amazement he found the lake in which he had lived was a very small part of the great world. He stayed on the shore a long while, thinking what a brave fellow he was, and at last resolved to live in the lake no longer, but to set out to see this great world. So he leaped back again, and said "good-by" to his mother with a grand air.

"You must not go," cried the old frog, "the dry season is coming, and you will die for want of water! Stay here where you are safe!"—But Rana paid no heed. "She's an old fogy!"—he said to himself, as he set out on his travels. It was at first very pleasant to leap across the fields, there were a plenty of flies and other insects, and he often cooled himself in the brooks he had to cross; as day after day passed by, Rana grew larger and fatter and greener. But after a few weeks the weather changed; no rain fell for many days, the brooks were all dried up, and again and again poor Rana wished himself back in the cool Lake of the Weeping Willows. But he could not remember the way back, so he was forced to go on, with feeble leaps, almost dead for want of water. At last he spied a little muddy pool, towards which he hurried with his last strength, and plunged into the water. Oh! how cool it felt to his parched skin! Rana stayed in the pool a long while, and then came out and sat on the edge, croaking loudly. This is what he was saying.

"I suppose I must have traveled a thousand miles all alone! Who says I can't take care of myself? I've grown handsomer, too, I see myself in the pool, my eyes are beautiful, and how fat I am! I would not go back to that old lake——"

He was croaking so loudly that he did not hear two little boys who were coming nearer and nearer to him. One of them had a large bag in his hand, and creeping up behind the poor frog, he seized him by the leg and popped him into it. Then both the boys ran home. "O! Mother," they cried, "see what a nice frog we have got for dinner, he has such fat legs." Rana leaped and struggled, but he could not get out.—"Oh, if I were home," he thought, "how kind I would be to my brothers, and how gentle to my mother!"—But it was too late, poor, foolish Rana never saw the "Lake of the Weeping Willows" again, but the French boys and their mother had a very nice dinner.

Aunt Sue's Chats.

I shall begin to think, pretty soon, that you boys are poking fun at me. Just see what "M. I. M." asks me about!—"Dear Aunt Sue: I am nine years old; can you tell me how to make a top sail-boat of any kind of rigging? What size of hooks you want for trout, and where is the best place to catch them? M. I. M."—Well now, M. I. M., I don't suppose I know anything more about constructing a sail-boat than you do; but I'll tell you how I should go to work if I wanted to make one. I should get a piece of soft wood, about 5 inches long, 3 wide and 1½ deep. Then I should mark the shape of the boat on the 3-inch wide surface, like figure 1, and proceed to cut out the inside. When that was done to suit me, I should cut away the outside, like figure 2. Then I should put two seats across for the rowers. "Yes, but I said 'sail-boat.'"—I know it, but let us have it so that it will do for either. Then I should make a hole in the center of the seat (the one just forward of the center of the boat) to step the mast into, cutting a little notch at the bottom of the inside, right under the hole in the seat, to hold the bottom of the mast, figure 3. Now I should whittle a mast about 9 inches long, and cut a

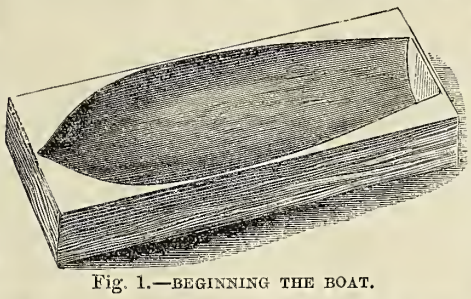


Fig. 1.—BEGINNING THE BOAT.

sail like figure 4 out of white muslin, which I should sew or gum around the mast. Then I should make a small *crutch* for the gaff, and a larger *crutch* for the boom, (the gaff should be just half the length of the boom), letting the crutches rest against the mast, and fastening the sail to them, supporting the end of the gaff by attaching it to the top of the mast by a piece of coarse thread or fine string. Then I should put the mast into the seat, tie a piece of string to the end of the boom, and fasten it (the right distance to catch the wind properly) to a bent pin, or small tack, near the stern of the boat. Now she is ready to be launched. Oh no! we must nail a narrow

Fig. 2.—SIDE VIEW OF BOAT.

strip of lead under her keel for ballast, and be very sure we get it in the middle. There: that's the best I can do; and if I wanted to make a more extensive sail-boat, such as the boys have for racing in the park-ponds, I should go and look at a good sail-boat, and take the pattern.

Now about the hooks for trout. I should say that the size of the hook would depend a good deal upon the size of the fish you expect to catch. I have generally used

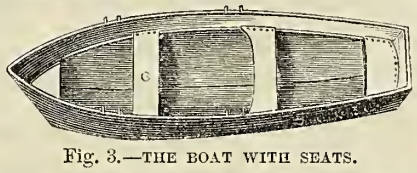


Fig. 3.—THE BOAT WITH SEATS.

pretty small hooks, and baited with angle-worms, gone out and got a pretty good mess of trout, while the *scientific* fishermen were hanging round the house getting their "*flies*" in order; and I have discovered that the chief secret of success is to keep out of sight of the trout; don't let them get a peep at you if you can help it; creep along behind the bushes, or stand off at a distance from the edge of the brook, and throw your line in. I have

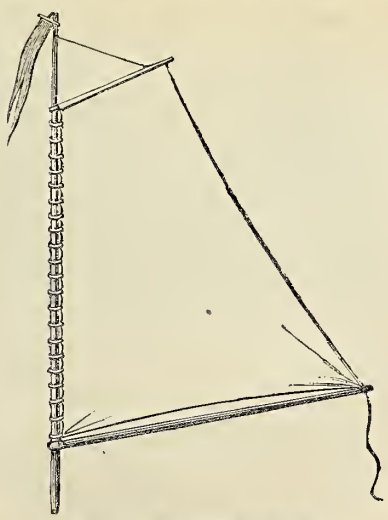


Fig. 4.—THE MAST AND SAIL.

fished for trout from a canoe in the Sault Ste. Marie; an Indian sat in either end of the boat, a gentleman and myself in the center. The trout we caught weighed from half a pound to a pound and a half each. I don't know what language the Indians spoke together, it might have been *Indian-rubber* for anything I knew about it; but I noticed that whenever I pulled in a fish they had something to say about the "squaw," and I came to the conclusion that *I was that "squaw!"* They had paddled us up the smaller rapid (in which we fished), after rowing us across the foot of the broad rapid, which is about a mile long, and has a descent of 22 feet. When we reached the top of the rapid, where the river was smooth, we pointed over to the shore, to signify to the Indians that we wanted to go home. They said something like "Tuggus kewatawa geezegoquawattamipocomataquahoko," or words to that effect, which we supposed meant—"Do you want us to row you across here, instead of taking you back by way of the small rapid?" and we nodded assent; when straightway they turned the bow of their canoe into the wide, foaming, roaring, plunging rapid—rocks on every side. I thought my time had come! But by a dexterous use of their paddles they guided us past the rocks, turning sharp angles like a flash, when often it seemed as though the canoe was going to dash her bow upon a huge rock. Oh! wasn't I glad to get into smooth water, safely! They told us, at the hotel, that no boat had ever gone down those rapids in safety, and that only canoes, managed very skillfully by Indians, could accomplish the feat. I don't want to try it again!

The Doctor's Talks—On Centennial Matters.

In this Centennial July, what should I talk about if not the Centennial? I do not mean the great exhibition at Philadelphia, for the number of our boys and girls that can attend that is very small. That exhibition is only one of the ways of celebrating the Centennial Year. You must not think that only those who can reach Philadelphia, and the show there—great as it is—are the only ones who are interested in marking this year as one that is more than all other years that we are likely to see, for this Centennial Year interests every one now living in America, whether born here, or coming from other countries, have made this their home. If I had all you boys and girls around me, (bless me what a lot there would be!) on the Fourth of this month, I think I should do, what I never did before, make a Fourth of July speech, or at any rate, a talk—though it is more likely that I should at once begin to ask questions to make you talk. As we cannot all be together, we must make our talk on paper, and the first thing that I would ask is, why do we call this the Centennial Year, and the 4th day of the month the Centennial Fourth of July? Some boy or girl will answer, "Because it is a hundred years since the first Fourth of July."—"When was the first Fourth of July?" "In 1776."—"But there were July's before that, and each month had a fourth day, what was there about that particular fourth?"—There would then come from all quarters, "The Declaration of Independence."—"What was that?"—Then I am afraid that the answers would not be so prompt. How many of you young people—yes, and old people too—have read that paper, the adoption of which on the Fourth of July, 1776, made that day one to be remembered each year, and especially so on the hundredth year?

I think the best thing that all of you, girls and boys, who are old enough to read and to understand what you read, can do on the fourth of this month, is to read over this Declaration and try to understand it. Before that time this country having been largely settled by English people, was governed by England. The laws were made in England, and English governors and other officers were sent to enforce them. It happened that at that time the English king and his advisers were very different from the excellent woman who is now Queen, and the men who now are her ministers. They did not care to please the people in America, and they made very bad laws. After sending men over to England to ask for better laws and better governors, and getting no change, the Americans on that Fourth of July, 1776, said that they would make their own laws and would govern themselves without any help from England. The "Declaration of Independence" gives the reasons for doing this, in the strongest and most beautiful language. That memorable piece of parchment was signed on the Fourth of July, 1776, and the very same piece is carefully kept. It is usually kept in Washington, but during the Philadelphia Exhibition it is to be in that city, and may be seen in Independence Hall, the very room in which it was signed 100 years ago. I have seen it several times; you might pass it by as of not much value, for time has had its effect, and many of the names are so faded that they can scarcely be read. As we look at it now we can hardly know what a struggle it cost the signers to separate themselves from the mother country, nor had they any idea of what would follow that act. One hundred years ago there were only 13 States, with a little over three millions of people, and now there are 49 States and Territories with over forty millions. When you read the Declaration you will think of these things, and have a great respect for the men who on that day declared the right of the people to govern themselves. But the Dec-

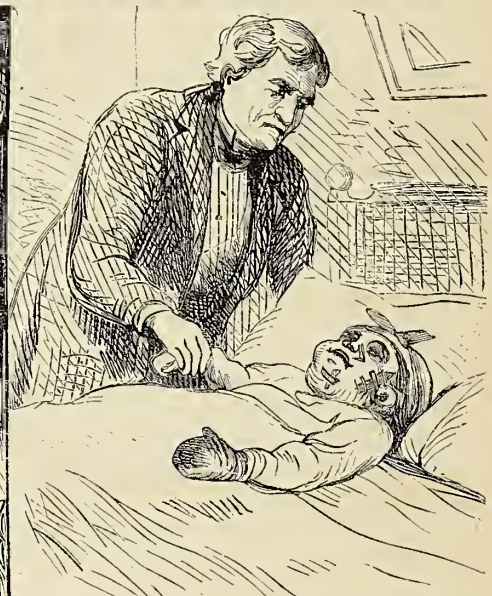
He borrows a book on Fire Works, retires to the barn, and devotes himself to the study of the art of Pyrotechny.

He goes to the Druggist's for saltpeter, sulphur, and other villanous materials to make Fire Works.

He compounds Fire Works in the barn, and makes designs, which shall astonish the people on the 4th.

He would like to know if the red fire is really red, and he thinks he will try just a little in the barn.

A view of the barn some hours afterwards, by "our special artist, taken on the spot."



The Doctor thinks that he will not lose his eyesight, and with good care may get out in a month or so.

laration did not please the English government, and they tried to hold the country by force. Then followed six years of war, six years of which every one of you should read the history, and all of you who live in the older States should hold every place where a battle was fought, or where an American army was encamped, as sacred. There is scarcely a town or village in the States then concerned in the war, but had some part in this war, and Congress and the President have recommended that the history of all these should be recorded this year and preserved for those who will come after us. It seems to me that the most important thing that this Declaration declared, is the right of the people to govern themselves, without the help of kings, emperors, or any other rulers, whose only right to rule is because they belong to a particular family. This is after all the great thing that we celebrate, that after a trial of 100 years, the people choose their own rulers, and though mistakes may sometimes be made, they find it the best way.

Now after you have read the Declaration on the Fourth, what else will you do to celebrate the day? You perhaps remember that in the spring I advised you to plant Centennial trees. Some of you have done so, and some have not, but it is not too late, for this whole year is the Centennial Year, and trees can be set in the fall quite as well as in the spring. And though those planted in the spring have some months the start, those set in the fall will have quite as good a chance, and will be as much "Centennial" as the others. This Fourth of July will be a good day to fix this in your minds, and to resolve to plant a Centennial tree, it may be one for the whole family, or better, one for each member, and in some families thus make a nice little Centennial grove. To the more strongly fix this upon your minds, you might now choose the places for planting these trees. Indeed there will be a chance for a clever little family celebration, in going to the place and have each one select the spot for his or her tree, and drive down a stake to mark just where it shall stand. This will be a sort of promise to put the trees there when the proper time comes, and you can also have a good time over doing that. Mind one thing, don't forget a tree for the baby, and for each little one too young to know what it means. So in various ways, each one can make this Centennial Fourth of July a pleasant one to look back upon. As I suggested last month, let us now begin to celebrate the day without the help of noisy and dangerous gun-powder in all its various forms; let us leave the crackers for the Chinese to use for driving away evil spirits; let us stop setting fire to stacks, barns, houses, and even (as happened a few years ago with Portland), a whole city, with squibs and rockets; and let pistols, guns, and cannon rest where they can do no harm. Every year the list of so-called accidents from the use of powder is a most sad one, fires, lost fingers and eyes, and even deaths, bring mourning to families who, on this day of all others, should be joyful and thankful as they think of the blessings which have followed the act of the day of which this is the centennial. Sometimes a lesson is better given by a picture than by words, and one of our artists shows in an engraving given above, what those who make too free with gun-powder may expect. There is now a talk of having no more fireworks in cities, but to decorate the houses in the day with flags and bright colored cloths hung from the windows, and in the evening to illuminate the houses, by placing lights at the windows, or hanging paper lanterns upon the outside and strings of them across the streets. Something of this kind might be done in the country, though a single house will not make a very great show if illuminated, and it is not a matter to be trusted to young people. But you will be sure to put out every flag, large or small, and if you have, or can make, paper lanterns, these may be hung in the trees around the house, where they can do no mischief and make a very pretty show. If you have never seen trees illuminated in this way, you have no idea how pleasing is the effect of the light shining from among the leaves. The lanterns and candles cost much less than fireworks, and besides that they last for some hours, and do not all go off with a whiz and a bang.

I feel quite sure that some of the boys who think that Fourth of July is only another word for fire-works, will say, "The old Doctor has forgot that he was once a boy, and that boys want to have fun on the Fourth, and he would have us give up fireworks just because they make a noise."—There you are very much mistaken, boys. It is because I *do* remember all about it, that I would like to have boys celebrate in a different manner. If for their own safety only I would have them give up powder in every shape. I recollect too well the woundings and deaths. One very sad case especially was one of my very dear boy friends, into whose eye there flew a piece of a percussion cap. The poor fellow lived in pain for years, and at last died from this cause. When I remember this and many other injuries, and several deaths, I feel that I am doing the boys a service in trying to get them to have a good time in some other way. That you may all, both boys and girls, have a day of pleasant and safe enjoyment, with lots of fun, is the wish of THE DOCTOR.

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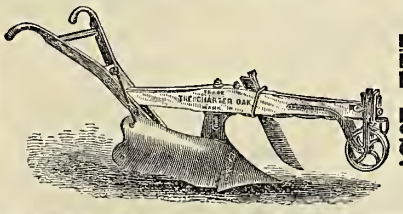

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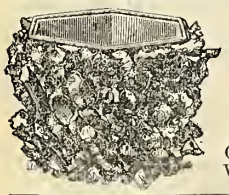

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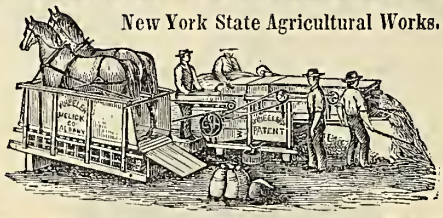

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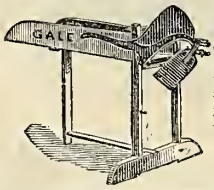

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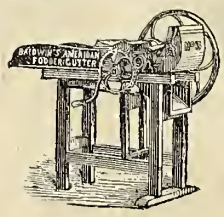

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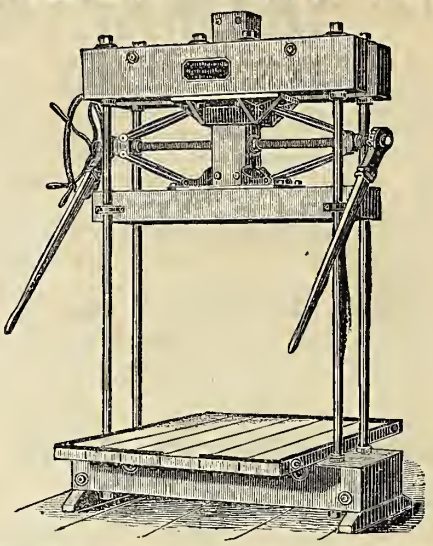

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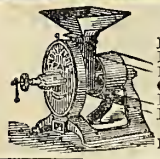

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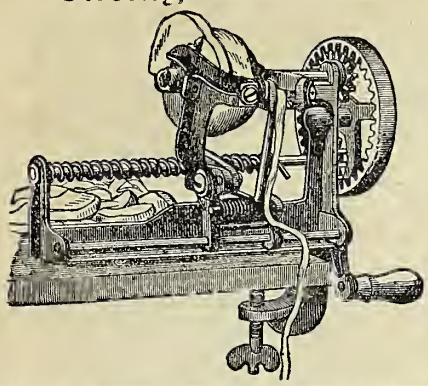

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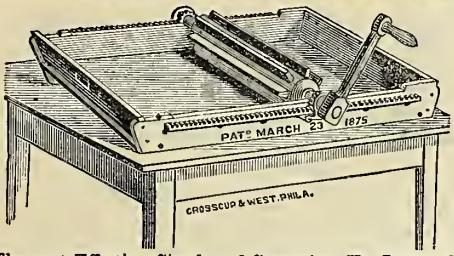

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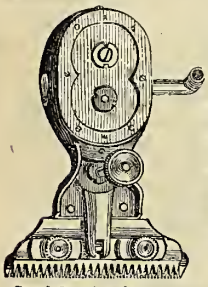

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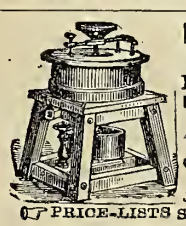

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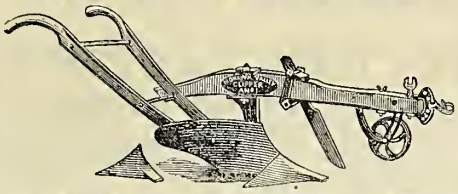

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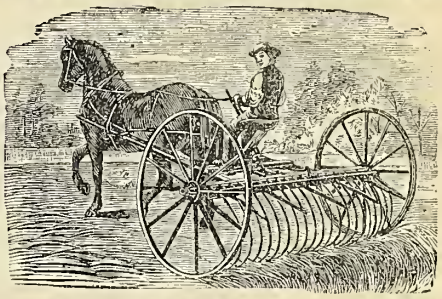

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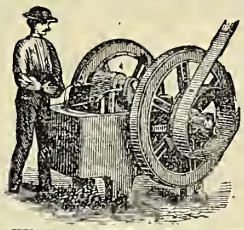

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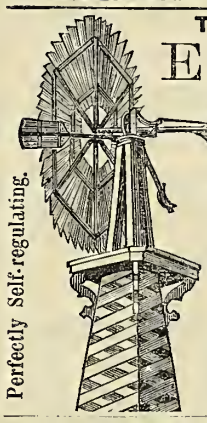

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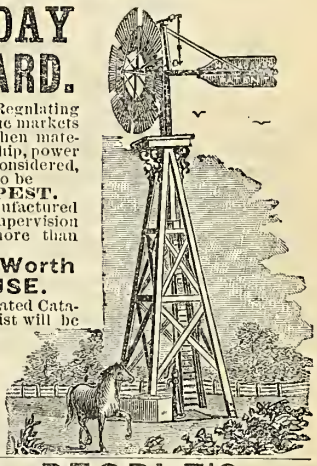

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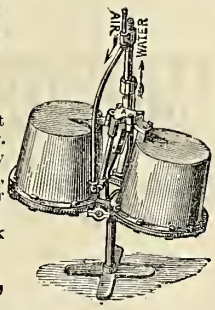

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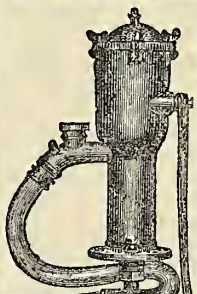

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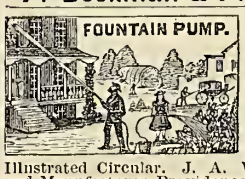

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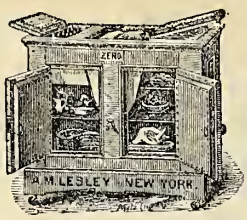

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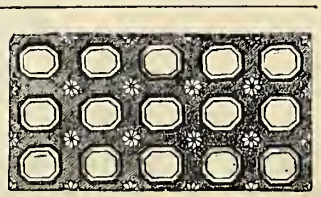

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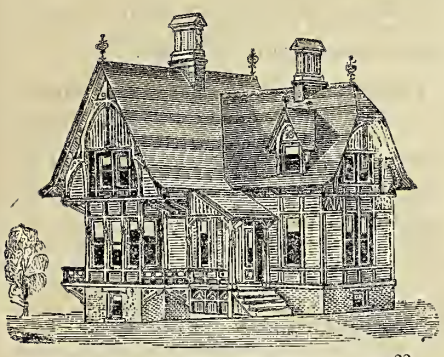

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 247.

Tumors or Abscesses on the Jaw.—"J. F. Z.," Spencer Brook, Minn. The probable cause of this disease is a scrofulous condition of the animal. Its seat is the jaw-bone, and to establish a cure, if that is possible, the affected bone must be cut away. Sometimes the whole jaw must be removed, which of course would render the animal useless. The flesh of a scrofulous animal is not fit for food.

Sheep in Oregon.—"G.," Jackson Co., Oregon, sends the following weights of some of his Cotswold ram lambs, as follows: one dropped March 1st, weighed at four days old, 18 lbs; one at birth, March 5th, weighed 13¾ lbs., and one at birth, March 25th, weighed 14 lbs. Weighed again on April 1st, No. 1 had increased to 48 lbs., and No. 2 to 40 lbs. These lambs and the ewes had only pasture and some wheat hay in February.

Why a Cow makes little Butter.—"J. L. L. M.," Berks Co., Pa. To feed a cow five quarts of "corn chop" a day will tend to reduce her milk and fatten her. It is too heavy feeding. Three quarts a day of mixed corn and bran ground together, with cut hay and fodder, ought to be sufficient for an ordinary cow. To feed too much corn-meal will sometimes dry up a cow.

Treatment for Garget.—"A. Q. M.," Longmont. The proper treatment for a cow suffering from garget would be to give her 8 ounces of Epsom salts, and when this has operated, to give her half an ounce of sulphur, mixed in a bran slop once a day, until the heat and hardness of the udder have disappeared. During this treatment the udder should be bathed with cold water, to which a little of ammonia water has been added. The bathing should be done twice a day, and should be accompanied with gentle rubbing and kneading for half an hour. When a cow produces a dead calf, the probability is that she is suffering from some disease of which this is an effect, but not a symptom. To say what should be done is not possible without knowing how she is otherwise affected.

Crude Petroleum.—"D. B.," Champaign, Ill. In consequence of so many enquiries for crude petroleum, we repeat what was stated over a year ago, that it can be procured by the barrel of Mr. Geo. M. Lyons, Titusville, Pa.

The Tedder for Clover.—"W. J. O.," Wartrace, Tenn. The opinion that the tedder is not adapted for clover-hay should at least be modified. If the clover is cut late, and tedded when nearly dry, much of the leaf will be wasted; but now that the greater value of early cut clover is so well known, and the fashion of starting the tedder as soon as the clover is cut, is common, this machine may be of advantage if used with care and judgment. There is a difference in tedders; those that have a more violent action than others should be avoided for use in clover.

Black Lambs.—"D. W. L.," Amelia Co., Va. Occasionally a black lamb will be dropped in a flock of pure Southdowns. It is probably a reversion, as it is called by breeders, to the original type from which the black legs and faces have been derived. It may be more strange still that a black or a spotted lamb should appear in a flock of pure Leicesters, but that has happened. This sporting, or accidental variety of color, in pure bred animals, is something we cannot account for. Among our western buffaloes or bisons, which ought to be a pure breed if there is any such, there are white individuals occasionally seen.

Plowing Corn.—"S. E. H.," Chester, N. J. We do not advise using the plow in cultivating corn, but on the contrary the use of the cultivator or horse-hoe, which only disturbs the surface and keeps it flat. If we were to use a plow at all, we should first turn a furrow from the row, and afterwards turn it back again.

A use for Locusts.—A new and important use for locusts has been discovered by a French physician, which has been so favorably considered by the French government, that large quantities of these insects have been procured in Algeria, and shipped in barrels in a prepared condition to Brittany for use. The

locusts are either boiled or dried in the sun, and compressed into balls which are used by fishermen for bait in the sardine and pilchard fishery. These fish eagerly devour this bait, which, when it is broken up and scattered over the water, attracts them in great numbers. May it not be possible to utilize our locusts in this manner both for our lake and sea fisheries?

To Prevent Scours in a Colt.—"G. A. F.," Walworth Co., Wis. As soon as the looseness appears in the colt, give the mother one ounce of prepared chalk in her feed every night for a few days, and give the colt a little, mixed with a few pinches of salt in the hand to lick. If this does not act, the colt should be given a few teaspoonfuls of the following mixture daily, viz.: one ounce prepared chalk, half a pint of peppermint water, a teaspoonful of ground ginger; to be shaken before giving it.

The Value of a Timber Plantation.—An illustration of the profit of judicious plantings of timber is afforded by a recent sale in Scotland. This was of the growing timber upon 800 acres of otherwise worthless rocky land, which was planted 50 years ago with firs and larches. After repeated thinnings, which produced large sums of money, the rest of the timber has recently been sold standing for $80,000. The whole income for the 50 years is said to be equal to that from the best arable land in the neighborhood.

The Death of Louis Van Houtte.—One of the most eminent of European horticulturists was Louis Van Houtte, who died at Ghent, Belgium, on May 9th, last, at the age of 66. He began his career as a collector of new plants in South America and Africa, and later founded at Ghent the celebrated nurseries which bear his name, and which are known for their extent and excellence to horticulturists in all parts of the world. He began, about 22 years ago, the *Flore des Serres et des Jardins d l'Europe*," the most splendidly illustrated horticultural journal in the world, the 2,261 colored plates which the volumes contain being drawn, printed, and colored in his own establishment. The extent of his operations may be judged by the fact that his funeral was attended by over 200 of his employés. Many of the finest plants of our greenhouses and gardens entered commerce through his establishment, and his foreign relations, including numerous correspondents in this country, were extensive.

Exports of Produce from New York in 1876 as compared with 1875.—The following shows the exports of leading articles of agricultural produce from New York for the first five months of this year as compared with the same period of 1875:

	1876.	1875.
Flour, bbls	827,956	754,206
Wheat, bush	9,797,461	6,415,808
Corn, bush	5,657,056	5,297,150
Pork, bbls. and tierces	75,426	83,782
Beef, bbls. and tierces	51,461	43,685
Bacon, hundred weights	894,795	900,940
Butter, do. do.	8,904	17,223
Cheese, do. do.	208,610	186,928
Lard, do. do.	578,891	680,735
Tallow, do. do.	205,065	181,229
Manufactured Tobacco, lbs	3,094,075	2,712,907

Value of the Wool-suds of Woolen Mills.—As an instance of the economy with which woolen factories are operated, may be cited the process by which the grease from the wool is saved and utilized. The water from the scouring vats, which formerly was run into brooks and streams, and which so polluted the water as to kill the fish, and give rise to bitter complaints from those persons who were compelled to use the streams, is now caught in cisterns, and treated with sulphuric acid. This causes the grease to rise to the surface in a mass a foot or more in thickness, which is then collected, and by further treatment is made to yield a valuable lubricator for machinery, olic acid, and stearine. Some English millowners now realize $5,000 yearly from this previously offensive waste.

To Raise the Water of a Spring.—"C. A. B.," Forest Lake, Pa. There is no way to bring water from a spring to a house up a grade of 30 feet, except by using some mechanical power. In this case a suction pump would not answer the purpose.

Will Poultry Keeping Pay?—"L. H. E.," St. Joseph, Mo. This depends greatly upon the person who engages in it. We have known a man to succeed very well, and make money at the business, and his successor to make a bad failure, although he had the same opportunities. A hen, properly cared for, can be made to yield a clear profit of one dollar a year, and if a man can do that with 200 hens, he can do the same with 2,000 if he has room enough. One acre for each 100 fowls, and four cocks to the 100 hens is a sufficient allowance. A beginner should commence with 50 or 100, and early in the spring is the best time. He should choose no hens more than two years old, and one year old would be better.

Feeding young Calves without Milk.—"J. H. L.," Carroll Co., Md. Calves may be raised without milk by feeding them the following substitute, viz.: take one pound each of sifted oatmeal, wheat shorts, and linseed-meal; boil these in two gallons of water, in which a handful of clover hay has been previously boiled for an hour. Add four ounces of sugar, one ounce of salt and a teaspoonful of prepared chalk. After these have been boiled for an hour or two, strain the liquor and set it away to cool. Give one-fourth of this slightly warmed twice a day, and gradually increase the quantity as the calf grows older, until it has a gallon at each feed. As soon as it will eat, some finely chopped hay sprinkled with oat-meal and linseed-meal may be given to it.

To Remove a Tumor.—"J. R. T.," Norwich, Conn. If it is positively known that a bunch upon an animal is a fatty tumor, there is no trouble in removing it. If there is a doubt about it, it may be decided by handling the tumor. If it is hard, and when pressed, retains the impression of the finger, and can be moved about beneath the skin, it may be removed by opening the skin and simply turning it out, as it is not adherent to the muscles. If the swelling is soft, and when pressed, returns to its shape again, the probability is that it contains pus or fluid matter which will escape when the tumor is opened. The wound in either case should be kept open for a time before it is allowed to heal.

Hungarian Grass.—"L. M.," Clearfield Co., Pa. Hungarian grass, or "German millet" may be sown in July. Half a bushel of seed should be sown if fodder and not seed is desired, as thick sowing produces a fine and softer herbage than thin sowing. The crop should be cut as soon as the blossoms appear, as it is then in the best condition for hay. It withstands dry hot weather very well. Unless the soil is good, or is fertilized, a heavy crop cannot be grown. A fair crop is two tons of hay per acre, but double that quantity is sometimes yielded.

The Price of Wool.—"F. C. L.," Kansas City, Mo. It is impossible to intelligently even guess, much less predict accurately as to the future of the wool market. Prices are now lower than they have been since 1861, although not quite so low as then. The manufacturers are stocked with goods, and are buying wool very slowly to meet only their present light wants. Those who can afford to hold their wool, and choose that course, will realize any benefit that may accrue from a possible advance in price. As wool loses nothing but interest by keeping, and to keep the market bare of supplies will tend to harden values, it might be a prudent course for those who look for higher prices to hold their wool for an advance.

Read the Advertisements.—"C. N. C.," Richmond, Va. Much trouble in writing and replying to communications would be avoided if our readers would look over the advertising pages before they write for information on various matters. To a farmer or other person who wishes to learn about things in common use, these columns contain much interesting information. Your enquiry about Chemical Fertilizers would have found a reply on page 229 of the June *American Agriculturist*. A list of prices of fertilizers is given every month, and any of the articles mentioned can be procured in small quantities, and of the best quality, at the prices quoted.

Defaced Rose-Leaves.—"T. R.," Washington, D. C., sends us rose and other leaves, from which semicircular pieces have been cut with almost mathematical accuracy. He can find neither "bug, slug, or beetle" on his plants, and thinks the mischief must be done at night. Not at all, the work is done at broad daylight, and very quickly too, by a Leaf-cutter Bee (*Megachyle*), which uses the pieces to build her nest in a hollow stem, under a board, or in some such sheltered place. It is estimated that a single insect will use about 1,000 pieces in making her nest. Unless the bee can be caught at work, or traced to her nest, and killed, we doubt if the cutting can be prevented.

The English or Horse Bean.—The *Mass. Ploughman*, in a recent useful article upon the cultivation of leguminous plants, calls attention to the value of the English, Horse, or Broad Bean, as it is variously called, and thinks that it is not much cultivated because changes take place slowly, and that "it will probably be many years before it is as much grown here as in Europe."—Our friends cannot have tried to cultivate this kind of bean, or they would have discovered that it can never be a profitable crop with us, unless our climate should change greatly. It succeeds well in the cooler and moister climate of England, and in other parts of Europe. With us, no matter how early it may be planted, the hot weather comes on and checks its growth before the beans can perfect themselves, and the crop has been, with us, in several experiments, practically a failure. Then the plant-lice seem to have a special fondness for it; we think we have never seen any other plant so thoroughly covered by them.

Box-Elder or Ash-leaved Maple.—"A. W.," Wichita, Kas. The seeds of this ripen about the same time as those of the Sugar Maple, i. e. in October. Much disappointment arises in growing this tree from seeds, from the want of knowledge of one fact: its flowers are diœcious, i. e., the male and female in different trees. The pistillate or female tree forms its keys, or seeds, to all outward appearance perfect, whether fertilized or not, and a tree will hang full of seeds, not one of which will grow. In collecting the seeds, examine carefully. Under the best circumstances not more than about a half will be found perfect. If the swollen portion at the base of the wing or key is found to be empty, the seeds are useless; if, when cut open, they are found filled—or half of them are—with a kernel or embryo, they may be gathered. Keep them through the winter mixed with merely damp sand, in a cool place, and sow in spring as early as the soil can be worked. No seeds of trees that transplant readily, should be sown in place. Sow these an inch deep, in drills 15 inches apart. What may be the commercial value of the trees in your neighborhood, we can not tell you. The tree is by some regarded as giving more good fuel in the same time, than any other tree; its sap will make sugar about as well as that of the Sugar Maple; the wood is valuable for furniture and similar uses, and it is an excellent ornamental tree. Take it altogether, it is one of the most valuable where quick returns are desired.

Agricultural Patents.—The inventive genius of American mechanics, is well shown in the multitudes of patents granted each year. The total number of patents issued up to the present time, amounts to nearly 177,000. Many of these are useless and dead, but the majority are of value, and a few of them have not only revolutionized the world socially, economically, and politically, but have multiplied our wealth a thousandfold. As regards agriculture, the efforts of inventive mechanics have been of the greatest value, for curiously enough it is rarely that a farmer invents any thing that eases his own labor. He can not, therefore, complain with any justice that he should be called upon to pay something for the use of what he cannot now do without; nor that a mechanic, to whom millions of farmers owe much of their comfort and wealth, should be enriched through the tax which the patent laws secure to him for the use of his inventions. The various patents issued, which relate more or less to agricultural operations, are enumerated as follows: Beehives 645; brooms and brushes 750; carriages 1,495; churns 1,391; clothes driers and wringers 984; grain cutters and binders 135; grist mills 371; fodder cutters 401; sugar mills 343, and stoves 2,400.

The Langshan Fowls.—All that was stated in reference to these birds last month, was quoted from an English journal, but we have numerous inquiries as to price, etc. So far as we are aware, none have yet been brought to this country.

What is Niter-Cake?—"E. D. C.," Poolesville, Mo. Niter-cake contains no nitrogen, it is a waste product left after the extraction of nitric acid from nitrate of soda, and consists chiefly of sulphate of soda and common salt, or an impure "Glauber's salt." As a fertilizer it is of no special value.

Prize Essay on Berkshire Swine.—We have received from the Secretary of the American Berkshire Swine Association, a copy of the Premium Essay, by A. B. Allen, Esq., on the Origin, Breeding, and Management of Berkshire Swine, which will appear in the forthcoming first volume of the Berkshire Record. The essay is very good as far as it goes, but unfortunately the author stops short at 1841, and at the last importation of Berkshires made by him in that year; and as he states that these animals have been bred out, the impression might be conveyed to the uninitiated reader, that the present stock of Berkshires are much inferior to those he bred in that early period of their history. As the modern Berkshire has been much improved since 1841, and as the best known breeders of the present day have come into notice since 35 years ago, the essay might well have been entitled the Ancient History of the Berkshires. The personal recollections of the author are interesting, but throw little light upon the modern history of the breed.

American Berkshire Record.—The early distribution of the first volume of this work, is announced by the Secretary of the Association, A. M. Garland, Esq., Springfield, Ill., from whom it can be procured for $3.30, postage paid. It is also announced that pedigrees for volume 2 are being prepared; entry blanks and information as to entries, etc., will be given to applicants by the Secretary.

The Use of Dynamite for Removing Stumps and Stones.—"A. J. B." Dynamite or giant powder has been extensively used in clearing land of stumps and stones, in England and Scotland, and as it is more effective than common powder, it will doubtless be found useful here for the same purpose.

Holes in Cow's Teats.—"C. D. S.," Scioto Co., Ohio. It will be impossible to heal up these holes while the cows are milking. When they are dried off, a cure may be effected by a simple surgical operation, viz: cutting the skin from around the hole, making a short slit, and closing it with a surgeon's stitch; the wound will heal in a few days and close the opening.

A Biting Colt.—"R. T. H.," Kings Co., N. Y. Colts are frequently taught the trick of nipping with their teeth, by their owners injudiciously playing with or teasing them. Once learned, the habit is cured with difficulty. The best remedy we can suggest is to treat the horse very carefully, avoiding all playing with it, and whenever it attempts to bite to whip it across the nose with a switch.

The Cause of Hard Times.—"B. T. R.," Monroe Co., N. Y., writes in regard to the causes of the "hard times." The pith of his remarks is that "the great cause of the paralysis of business is the depression of the farming interest; let farmers prosper, and all classes prosper."—This is taking the effect for the cause. Almost every industry of the country is worse off than farmers are at the present time. Quarrymen are working for 90 cents a day; car-drivers and conductors in the cities get $1.75 for 16 hours work, and stable-men $1.00 for the same time. Masons get $2.00 for 10 hours work, and these men pay one-third of their wages for rent. Besides thousands of workmen are idle. It is clear that they can not afford to buy the clothes and food that they otherwise would, and consequently the price of wool, wheat, pork, and butter is falling. This is why farmers suffer, but they are suffering little as compared with mechanics, thousands of whom are as near starvation, as they can well be. The hard times are affecting every class, and patience must help us all bear the burden.

Breeding Pure-Bred Poultry.—"A. W. W.," Wyoming Co., N. Y. Poultry cannot be kept pure unless each breed is confined in separate yards. If allowed to become mixed at any time of the year, there is danger of cross-breeding. One impure cross would affect the eggs of a hen for an indefinite period, perhaps for as long as she lived.

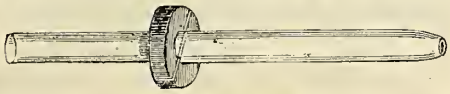
How do Ewes Recognize their Lambs?—"S. J. H.," Tuscumbia, Ala. We have never found any difficulty with ewes disowning their lambs after being shorn. At first the lambs have some trouble to find their dams, but manage very well in a short time. The story about Mexican shepherds is improbable. These shepherds have a great many sheep in their flocks, and could not possibly remember to which ewes each particular lamb belonged. We would rather trust the instinct of the sheep than the memory of the shepherds.

Short-horns and Durham Cattle.—"J. B.," Preston Co., W.Va. Formerly the cattle now known as Short-horns, were most numerous in the County of Durham, England, and in the district around it. They were then called Durham cattle. Now they are very widely spread, and go by the general name of Short-horns.

Turnips on Summer-Fallow.—"C. H. J.," Watervliet, Mich. Turnips may be sown in July or early in August, as a fallow crop, to be fed off from the ground or harvested. But to raise such a crop would destroy some of the effects of a summer-fallow, and change its purpose. A summer-fallow is intended to prepare the ground for a fall grain crop, by repeated plowings and cleanings from weeds; if it is sown with turnips, the field cannot be prepared for a fall grain crop, and the principal purpose for which the work has been done is destroyed. One pound of turnip seed is enough for an acre, if good roots are desired; two pounds will produce a thick crop. White turnips should be sown after the middle of July, and ruta-bagas or Swede turnips may be sown up to the 12th inst. The seed is worth 50c. a pound.

English and American Farming.—There is comfort for the American farmer still, notwithstanding that he is so much berated for his poor farming, as compared with that of England. At a recent meeting of Scotch farmers, Mr. Hope, a well-known farmer and speaker upon agricultural subjects, stated that "not *one-fiftieth part* of the land in Great Britain was farmed as it might and should be." Mr. Hope undoubtedly sets his standard very high, for he is known as one of the best amongst the highest class of Scotch farmers, but it is some comfort to learn that all the poor farmers are not to be found in America. Mr. Hope's concluding remarks, however, are well worth notice. They are as follows: "The conclusions I draw from what I have stated are that it takes a large expenditure and a very long term to put land in the best condition for cropping; but when that is once obtained, the profits are undoubtedly large. *People have not faith in what land can really do* when liberally treated. I also know if the outlay for manure or labor is withheld for even two or three years, it takes double the time to regain what has been lost."

To Treat an Obstructed Teat.—"J. S. W.," Sterling, Ill. From various inflammatory or accidental causes, the teat of a cow may become injured and partially or wholly closed. When this happens, and it is necessary to draw the milk to prevent serious consequences, the following plan may be adopted. Procure a sound goose quill, rather small in the barrel, and bake it in a warm but not hot oven for an hour, or dip it into a sand bath made sufficiently hot to dry and harden the quill, and make it transparent without scorching it. Then cut off the feather part and the extreme point, removing the pith, and leaving the barrel clear and about three inches long. About one inch from the thicker end, carefully make two small holes through the quill from side to side, and pass a fine copper wire through the holes. With this wire fasten a ring of sole leather around the quill, so that when it is inserted in the teat, it cannot



TUBE FOR TEAT.

pass any further than the leather ring. When the milk is to be drawn, insert the quill, having previously oiled or greased it, and the milk will flow through it. When the milk has all come away, remove the quill. The accompanying illustration shows how the quill is arranged and how the ring is fitted.

Value of Labor in America.—A suggestive comparison may be made of the difference in the cost of labor in Europe and America, both in agriculture and other industries. For instance, the average wages paid to tanners in Europe is one dollar a day, while American tanners pay fifty per cent more. Yet the best authority upon matters relating to tanning, estimates our higher wages as really the cheaper, considering the number of effective labor-saving machines in use here. It is the same as regards agriculture. With our lighter and more effective tools and machines, a farm laborer here can do more effective work for a dollar than the English laborer can; at the same time we pay double the wages the English farmer pays. Our great mistake is in using less capital in our farming, and thus producing less from an acre of ground than the English farmer does.

Crop Prospects.—Messrs. Semple, Birge & Co., of St. Louis, forward us a number of reports of the condition of the crops throughout the Western States, from Nebraska to Texas, gathered by them in response to a circular issued to a large number of correspondents in various localities. These reports agree in estimating the wheat crop as promising a largely increased yield over that of last year; oats promise a good crop, and corn has been more largely planted than last season, and looks well.

Draining Flowed Land.—"H. F. G.," Jefferson Co., N. Y. One of the chief benefits from draining land is the preventing of water from flowing over it in the spring and fall. Land that most needs draining, may be very dry and cracked open by shrinkage in the summer. The flowing of water over the surface washes away the fertility of the soil, which is not thus removed when the water simply passes through it into drains. Drained land can be worked early in the spring, and crops upon it are not injured by standing water in the fall and winter.

Paralysis in Pigs.—"L. W.," Kent, Mich. Paralysis of the hind-quarters in pigs, is sometimes caused by inflammation of, and consequent effusion upon the spinal marrow, causing pressure and loss of nerve power. Sensation and power of motion may often be restored by the application of a mild irritant to the loins. Turpentine, or a thin paste of mustard, rubbed upon the loins over the spine, generally leads to a cure. It is brought on by cold and damp quarters, or exposure to cold rains, and is more frequent in young pigs than in older ones. Lambs are subject to a similar complaint, arising from the same causes. A chill will sometimes produce it very suddenly.

The Maine Jersey Herd Book.—The first volume of the Herd-book of the Maine State Jersey Cattle Association is now in press. Over 500 entries have been made with pedigrees of the animals registered. The price is $1.25. Entries can now be made for the second volume, which will be issued as soon as a sufficient number have been received. Orders and entries may be sent to the Secretary, N. R. Pike, Winthrop, Me.

Preserving Green Hay.—The process of curing hay by preserving it in deep trenches, and covered with a thick layer of earth, is being extensively adopted with satisfactory results in many parts of Europe. A correspondent of a foreign agricultural journal describes his method as follows: "The grass was put into a pit 6 feet deep, quite wet, on the day it was cut, covered up to a depth of 18 inches with earth; the pit was opened the other day, after having been closed for eleven months. The process appears perfectly successful, and though involving a little more expense, it is worthy of consideration, in a wet season, whether it would not be worth while securing at least a part of the crop in this manner."—This plan would be very serviceable for the curing of late cut crops of fodder, for the proper drying of which the lateness of the season might present some difficulties.

Mere Mention.—The Acclimatization Society, of Queensland, publish a Report showing the attempts made to introduce new plants and animals into that portion of Australia.

The Entomological Society of Canada sends its Report for 1875, which shows that our friends over the border are wide awake, and that they give proper attention to the practical aspects of their science.

Carnivorous Plants, and other papers, read before the Am. Science Association, by Prof. W. J. Beal, of the Mich. Ag'l. College, are published in a pamphlet form.

The Flora of Iowa.—Mr. J. C. Arthur, of Charles City, has prepared a Catalogue of the flowering plants of the State, which is published by the Iowa Centennial Commission. Copious notes add to the value of the Catalogue, which bears the mark of thorough work.

The Botanical Bulletin, published monthly by John M. Coulter, at Hanover, Ind., though mainly devoted to western botany, contains matters of interest to all botanists, and is well worth the $1 charged for a year.

Catalogues Received.

The number of catalogues materially diminishes as mid-summer approaches. We make brief acknowledgment of the few that have come to hand since our last, without classifying them.

The Lacon Nursery Company.—Mr. D. B. Wier, who has long had a nursery at Lacon, Ill., has, with Mr. A. H. Gaston, a well known fruit grower, formed a firm, the name of which is given above.

Wm. Thompson, Ipswich, England, is one of the few seedsmen in the world who are at the same time botanists, and his catalogue of flower seeds bears the mark of critical accuracy.

Otto Ludwig, San Antonio, Texas. A list of Texan and other Cacti, and other plants of the far southwest.

H. T. Jones, Rochester, N. Y., deals in small fruits exclusively.

Standard Laundry Machinery Co., New York and Boston, send a thoroughly illustrated catalogue of their various machines.

The United States Wind Engine and Pump Co., Batavia, Ill. Their wind-mills are of all sizes, from the smallest up to those large enough to run a grist or other mill needing 40-horse-power.

Barnes' Foot Power Saws and Lathes, Rockford, Illinois.

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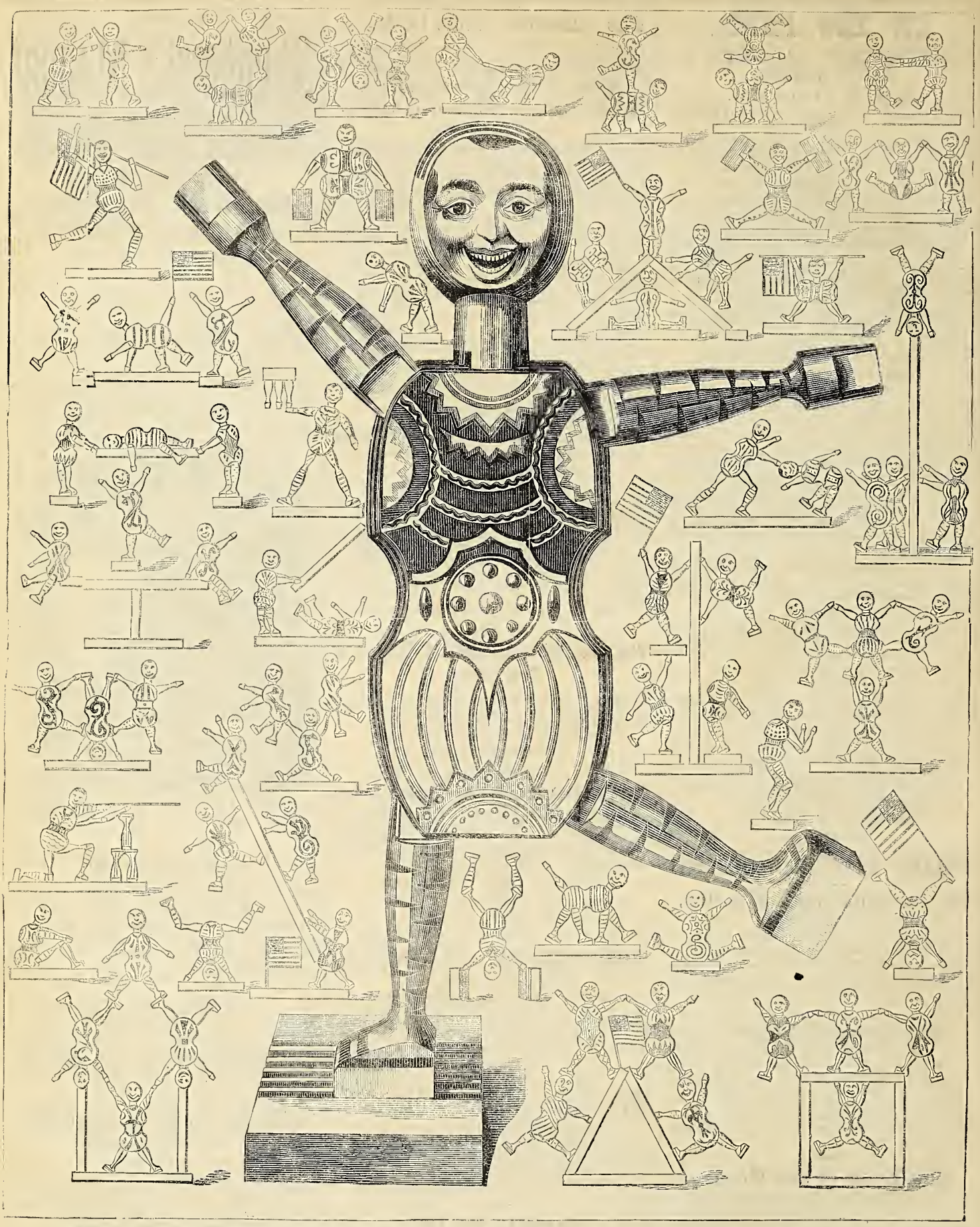

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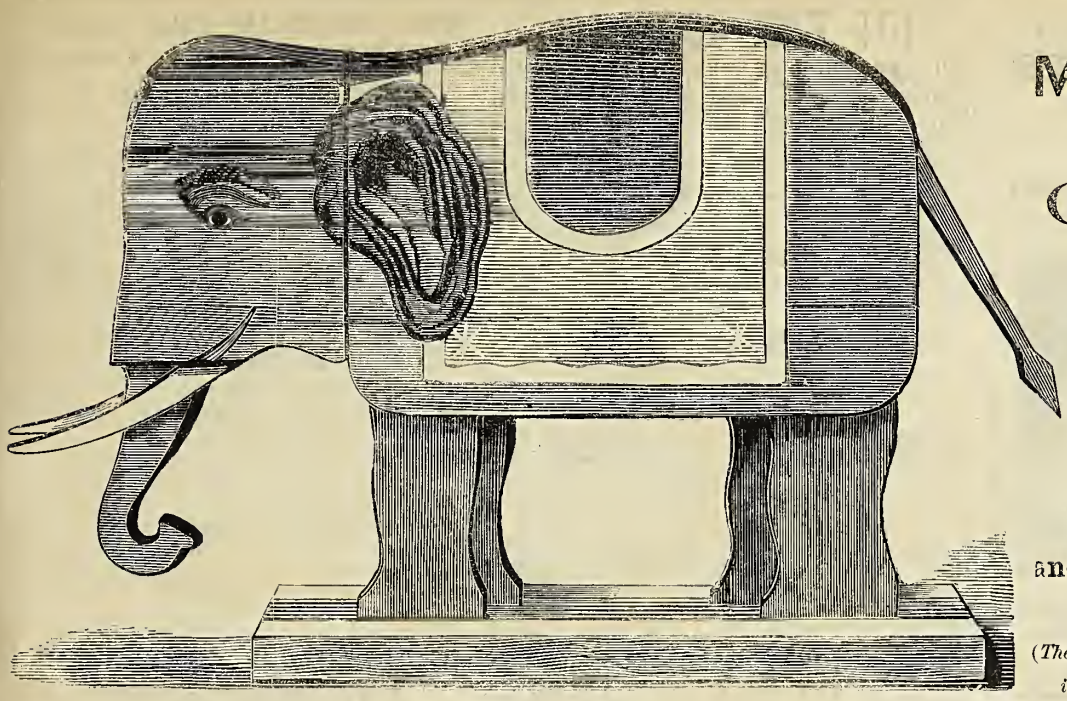

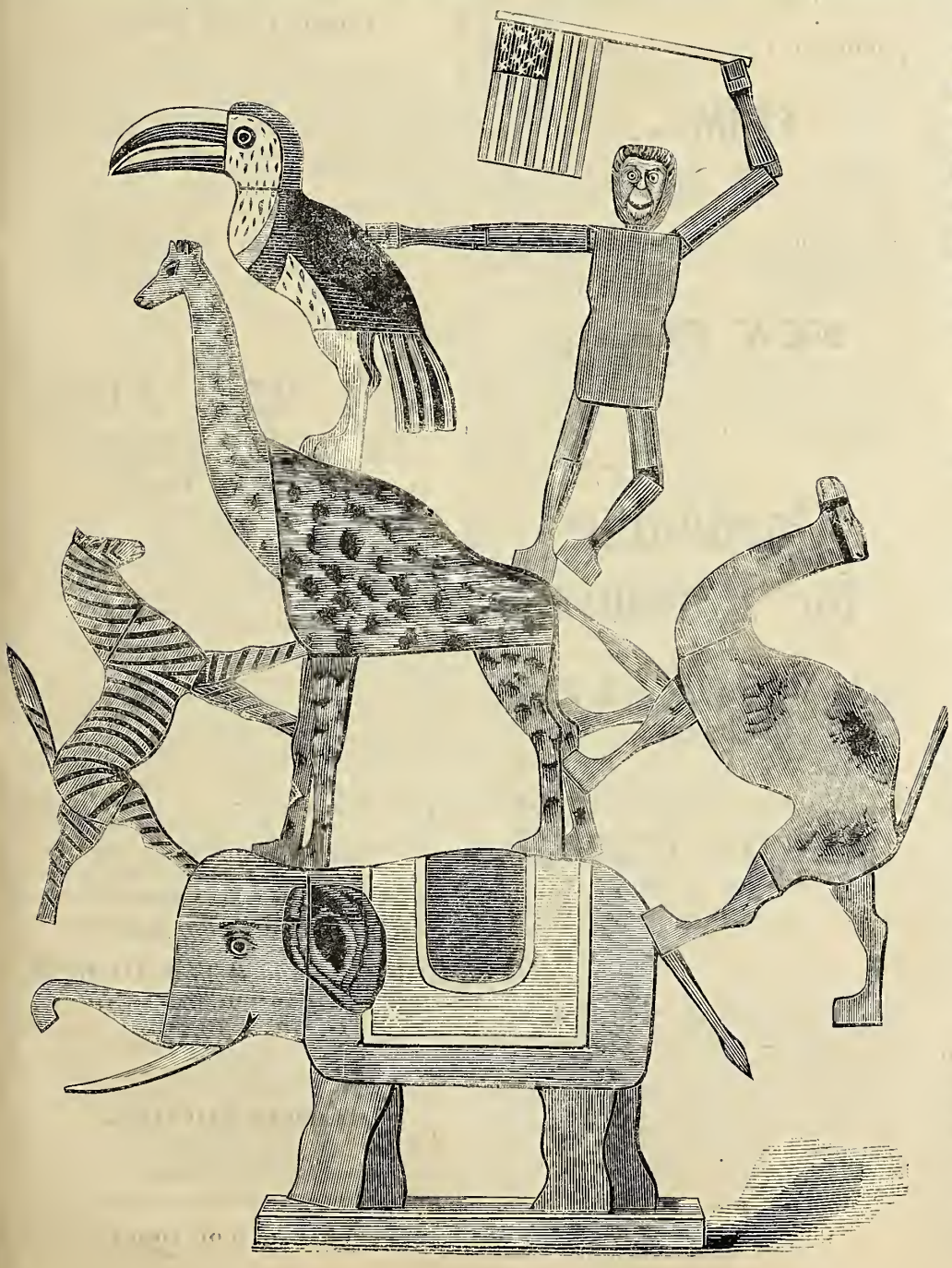

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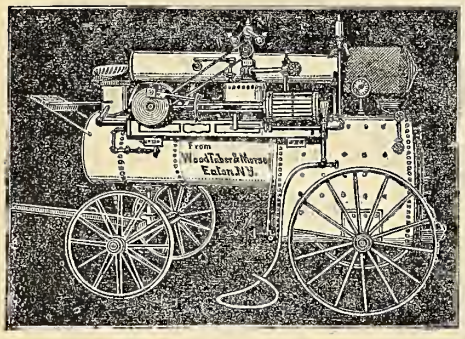

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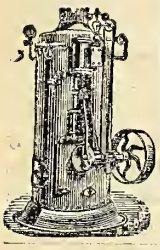

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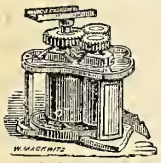

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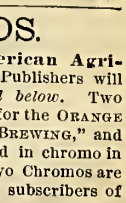

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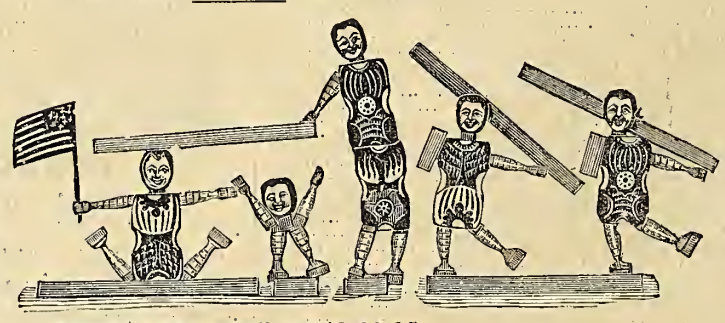

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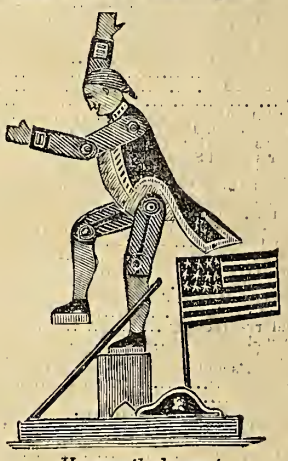

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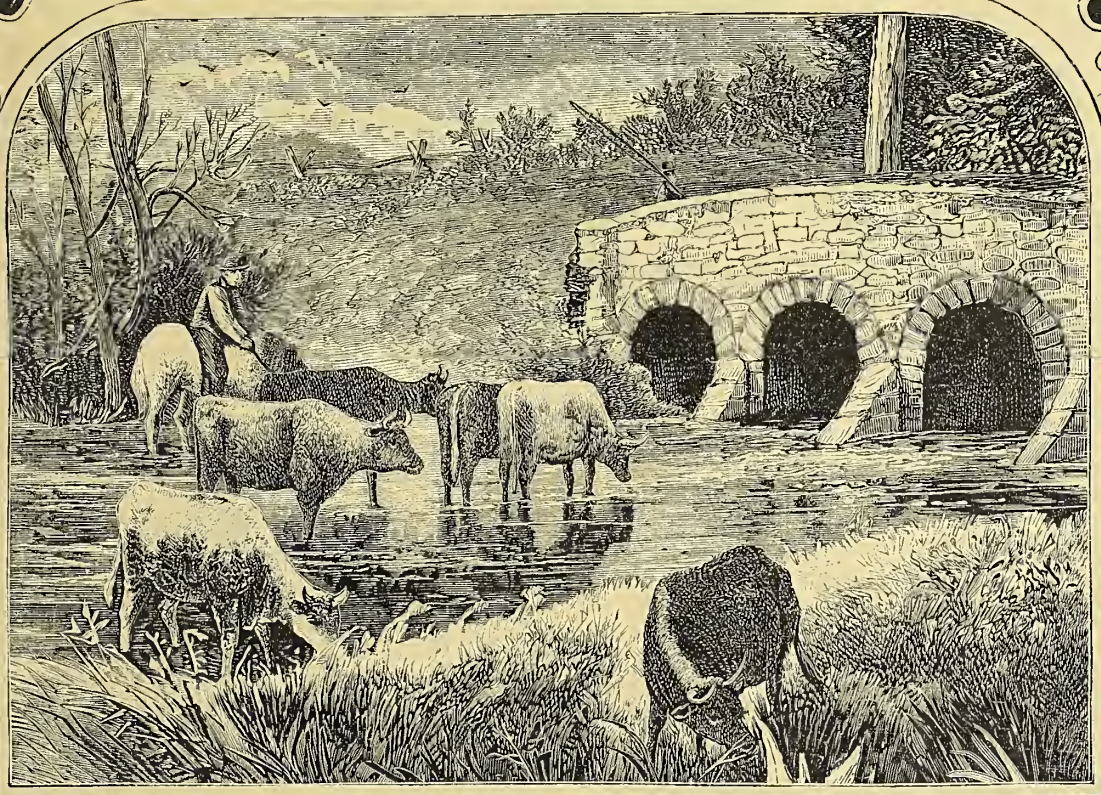

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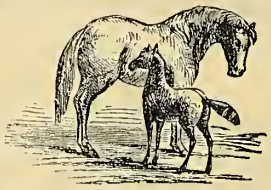

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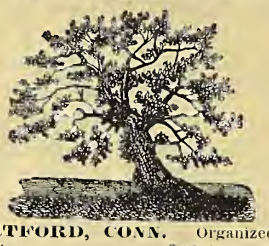

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VOLUME XXXV.—No. 8. NEW YORK, AUGUST, 1876. NEW SERIES—No. 355.

THE ROYAL OR BENGAL TIGER.—*Engraved for the American Agriculturist.*

According to our custom of occasionally giving engravings merely as pictures, we this month present the above. When we first came across this picture in the British Workman, it struck us as not only the best representation of a tiger we had seen, but one of the best animal portraits we had ever met with. The drawing, by an artist named Brittain, is masterly, as representing the savage dignity of the beast, and conveying the idea of concealed power and ferocity. Though not so large as the lion, the tiger is a more beautiful as well as a more powerful animal; its ground color is orange-yellow, except the white on its face, throat, and under parts, marked with elegant black bands. Its strength is enormous, a man being as nothing in its grasp.

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The Hairy Cone-flower, *Rudbeckia hirta*, has been sent several times of late, and recently by "J. S. W.," Dillsburg, Pa., and "O. W. W.," Orleans, N. Y., for a name. It is a branching plant, one to two feet high, roughly hairy, and bearing heads of flowers, one to two inches across, that appear like small sunflowers, with a very dark purple center. This is properly a western plant, which is becoming common at the East, its seeds having been brought in baled hay, and in field seeds, and is now frequent in pastures and meadows.

Calendar for August.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon sets.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	T	4 52	7 29	1 0	4 56	7 16	1 8	5 0	7 12	1 15
2	W	4 53	7 19	1 55	4 57	7 15	2 0	5 1	7 11	2 9
3	T	4 54	7 18	2 55	4 58	7 14	3 1	5 1	7 10	3 8
4	F	4 55	7 16	4 1	4 59	7 12	4 7	5 2	7 9	4 12
5	S	4 56	7 15	rises	5 0	7 11	rises	5 3	7 8	rises
6	S	4 57	7 14	8 2	5 1	7 10	8 0	5 4	7 7	7 57
7	M	4 58	7 13	8 23	5 2	7 9	8 22	5 5	7 6	8 21
8	T	4 59	7 11	8 41	5 3	7 7	8 41	5 6	7 4	8 41
9	W	5 0	7 10	9 1	5 4	7 6	9 2	5 7	7 3	9 4
10	T	5 1	7 9	9 24	5 5	7 5	9 26	5 8	7 2	9 29
11	F	5 2	7 8	9 50	5 6	7 4	9 54	5 9	7 0	9 58
12	S	5 3	7 7	10 24	5 7	7 3	10 29	5 10	6 59	10 35
13	S	5 4	7 5	11 6	5 8	7 1	11 13	5 11	6 58	11 20
14	M	5 5	7 4	11 52	5 9	7 0	morn	5 12	6 57	morn
15	T	5 6	7 2	morn	5 10	6 58	0 7	5 13	6 55	0 14
16	W	5 7	7 0	1 8	5 11	6 56	1 15	5 14	6 53	1 22
17	T	5 8	6 59	2 29	5 12	6 55	2 35	5 15	6 52	2 42
18	F	5 9	6 57	3 48	5 13	6 53	3 53	5 16	6 50	3 58
19	S	5 10	6 55	sets	5 14	6 52	sets	5 17	6 49	sets.
20	S	5 11	6 54	7 38	5 15	6 51	7 37	5 18	6 48	7 36
21	M	5 12	6 52	8 0	5 16	6 49	8 0	5 19	6 46	8 1
22	T	5 14	6 51	8 21	5 17	6 48	8 23	5 20	6 45	8 25
23	W	5 15	6 50	8 41	5 18	6 47	8 47	5 21	6 44	8 51
24	T	5 16	6 48	9 8	5 19	6 45	9 13	5 21	6 42	9 17
25	F	5 17	6 47	9 39	5 20	6 44	9 41	5 22	6 41	9 50
26	S	5 18	6 45	10 11	5 21	6 42	10 18	5 23	6 49	10 26
27	S	5 19	6 44	10 53	5 22	6 41	11 1	5 24	6 38	11 8
28	M	5 20	6 42	11 45	5 23	6 39	11 53	5 25	6 37	12 0
29	T	5 21	6 40	morn	5 24	6 38	morn	5 26	6 36	morn
30	W	5 22	6 39	0 53	5 25	6 36	0 54	5 27	6 34	0 57
31	T	5 23	6 37	1 50	5 26	6 35	1 56	5 28	6 33	2 2

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
Full M'n	5	1 51 mo.	1 42 mo.	1 30 mo	1 18 mo.	0 48 mo.
3d Quart.	12	5 15 ev.	5 3 ev.	4 51 ev.	4 39 ev.	4 9 ev.
New M'n	19	7 42 mo.	7 30 mo.	7 18 mo	7 6 mo.	6 36 mo.
1st Quart	26	1 34 ev.	1 22 ev.	1 10 ev.	0 58 ev.	0 28 ev.

AMERICAN AGRICULTURIST.

NEW YORK, AUGUST, 1876.

A farmer's work is never done. But there is a constant variety about it that prevents weariness, and some gratifying result is always perceptible for every labor. After the hurry of July comes a comparative rest; that is work *must* be done in harvest, but *may* be done in August, when the hurry of harvest is over. On the whole, we have had a favorable season, and cultivated crops that have been well worked are free from weeds, and are laid by in good condition. Now that a few days can be spared, every farmer should visit the Centennial. There is much to be seen that will give every man, woman, or child old enough to appreciate it, matter for thought, study, or imitation, that will be worth many times the cost. No person can view this grand exhibition, and come out of it discontented with things as we now possess and enjoy them. And of all persons who are benefited by the labors of mind and muscle of the last 50 years, the farmer stands first. Thoughtfully viewed, it is seen that nearly every invention in the arts and sciences, have gone to help him to work better or more easily; to reach his customers more readily, and to add to his comforts and enjoyment. What we have to do now is to avail ourselves of every possible help in our farm work, to make it more effective and profitable. On the whole, there is reason for congratulation, rather than for grumbling that things do not move fast enough for us.

Hints about Work.

Turnips.—Although we cannot complain of short fodder crops this season, nevertheless we would not on that account fail to add to our resources in this respect, not knowing what may happen before spring. We should therefore sow as many white turnips as possible, before the middle of the month. We prefer the Norfolk "White Globe," or the "Cow-horn," as these grow quickly, yield well, and are sweet and palatable. Any vacant ground may be used, or a piece of grass land that has run out and needs reseeding, may be turned down evenly, so that the grass is covered, and thoroughly harrowed without tearing up the sod. A dressing of wood-ashes will be found very useful for this crop.

Winter Wheat.—This crop usually follows oats or barley. To summer-fallow for the wheat crop is now a plan to be discarded, excepting under very unusual circumstances. The oat or barley stubble should be plowed as soon as possible, lest it may become too dry to work well, or weeds may mature their seed. We do not advocate making the ground too mellow, and would have the surface somewhat cloddy if the soil is mellow underneath. We have frequently noticed that the wheat upon most carefully finished and rolled fields, has suffered most from "heaving" in the winter, and that the wheat that has been "cultivated" in, has stood as well or better than the drill sown. We give two plowings for our wheat, one shallow one as soon as possible after the oats or barley has been hauled off, to cover the trash and start the shed seed, and a final one in September.

Seed Wheat should be selected as soon as possible. The most readily shelled wheat is usually the ripest and plumpest, and this should be selected for seed. Otherwise the seed wheat should be passed through the fanning mill three or four times, that the heaviest, largest, and cleanest grains may be gathered. In every locality some one of the best farmers should make a special business of raising seed wheat, which readily brings double the ordinary market price, and well grown and selected seed is well worth this price. Above all things avoid seed foul with cockle, chess, or other weeds.

Manure.—Manure is much damaged at this season by exposure to the hot sun while spread in the yard, or by mixture with seeds of weeds from the thrashing machine, or from foul pastures, from which they are brought by cattle. Both these evils should be avoided. Pile the manure as made, in compact, flattened heaps, and keep it moist; watering if need be with a few barrels of water now and then. Cut all weeds out of the pastures, lest they may be cropped by cows or horses, and the seeds brought home to go upon the fields again in the manure. Much may be done this month in gathering materials for compost. Road dust is particularly valuable, and may be gathered now in abundance.

Weeds in pastures, fence corners, road-sides, corn or potato fields, should be collected *and burned* if in blossom or seed. No other manner of disposing of them is safe, but this ends them. Remember that oats or barley from scattered seed in the newly sown wheat, are weeds as much as any other plant, and should not be permitted there. Where ragweed has been allowed to cover the stubble, it will pay to mow it and rake it off, rather than plow down the ripened seed, and stock the ground.

Clover Seed.—The high price of clover seed should make it an object to save the second crop of clover for this purpose. The aftermath is but poor pasture, and causes horses and colts to slobber until they get poor upon it. It will pay far better to save the second growth for seed, to be cut next month. 100 lbs. of "plaster" per acre, will help the growth very much.

Bumble Bees.—It is one of the most important late discoveries, that the yield of red clover seed depends upon the bumble bees. These insects fertilize the blossoms, conveying the pollen from one blossom to another by means of their long proboscis, and no other is known to do this necessary work. Without the bumble bees we can have no clover seed. The natural enemy of the bumble bee is the farmer's boy, who, when he tumbles over a nest and gets stung, never forgives or forgets it, but becomes a life long enemy to this busy bee. Give these insects a wide berth, and let them live to increase the yield and to reduce the price of clover seed, which is getting higher every year.

Flies.—This is fly time, and the horses stamp and kick the live-long night. To get rid of these pests, which are not house flies as generally supposed, but a true bloodsucker, known as *Stomoxys calcitrans*, or the "kicking causing Stomoxys," mix 20 parts of lard or glycerine, with one part of carbolic acid, and rub it lightly *upon the hair*—and not upon the skin—of the legs of horses and cows. Cleaning and washing the stables, and covering the opened windows with mosquito net, will help to secure a good night's rest to the horses and milking cows.

Horses.—A perfectly clean-cool stable, is prefera-

ble to a hed in a bare pasture field, for a hard worked team. If, however, there is a good piece of pasture handy, and the stable is neither clean nor cool, the pasture is to be preferred. But horses need their usual feed before being turned out. They can not live and work without sleep, nor sleep if they must pick a bellyful from the fence corners at night. Horse's feet and legs should be washed every night. (See preceding remarks upon flies).

Cows.—The yield of milk will fall off now without some fresh succulent feed. The suckers from the corn field; leaves from mangels, soft headed cabbages, or best of all, some especially provided corn-fodder, or oats and peas mixed, will be useful to keep up the supply of milk. Next month's butter is only second in quality to June butter, and to keep up the supply of milk is important, and easier to do than to restore it after it has fallen off.

Sheep.—For early lambs some of the most forward ewes may now be selected from the flock and kept with the ram, being all fed a pint of mixed bran and linseed or cotton seed cake meal per day, to hasten the breeding season. Thin ewes that have sucking lambs, should now be separated from the lambs by day, and the lambs weaned. Those ewes that have much milk should be closely watched, and their milk drawn if needed, to avoid swollen and inflamed udders. Sheep and lambs with filthy hind parts, should be closely clipped, lest they may become fly-blown. Now is the time to select a good thoroughbred young ram, for needed improvement of the flock. In choosing the breed it is well to study the prices of long and short wools. The Cotswold is the most promising and useful long wool sheep we have, and is now perfectly acclimated here, several of our native bred flocks being as good as any imported ones.

Water.—This is a dry month, and stock may easily suffer for want of water. Want of water is productive of much suffering, which results in disease and death. See that every animal is well supplied with pure water in abundance. Ponds, sloughs, and foul spring holes are not fit to supply stock water, and wells or cisterns only should be used. There are as many hogs die every year of disease resulting from want of pure water, as would pay for a well upon every western farm, and yet this loss is submitted to year after year. This is one reason why farming does not pay with some farmers.

Swine.—Pork is still high enough to leave a good profit to feeders. With the present promise of the corn crop, a reduction in the value of pork at some time seems inevitable. It will therefore be entirely safe to make the pork as cheaply as possible. This can be done by feeding well and marketing early. A bushel of corn fed in August or September, will make twice as much pork as a bushel fed in November and December. To provide dry, clean feeding pens, will also lessen the cost of the pork, because it will encourage the growth of the swine.

Root Crops need to be thinned out and kept free from weeds. As soon as the leaves meet across the rows, the hoe may be laid aside. When thinning the crop, fill blank spaces by transplanting with a common garden trowel. This may be done at any time, without putting the plants back in the least.

Pastures.—Old worn pastures may be renewed by harrowing the mossy spots, or the places covered with sorrel, dressing them well with plaster, and sowing fresh grass seed. A light dressing of guano, superphosphate of lime, or nitrate of soda, will greatly help to restore a worn meadow, and bring in a fine growth of grass. The droppings of the cattle should be broken up and scattered occasionally upon both pastures and meadows that have been pastured. Pasturing meadows is not profitable, unless there is a heavy aftermath, and then cows will do less injury than horses or sheep.

Fattening Animals.—"An animal well summered is half wintered," so with animals to be fed for the butcher, every pound of flesh made now, will cost but a fourth, or less, of that made in the winter; besides the growth of an animal increases in proportion to its size, up to a certain limit, and the heavier it is made now, the greater its future increase. Therefore sheep, pigs, or beeves, should be pushed forward now as rapidly as possible. Do not forget that water is food as well as solid matter, and should be given with as much regularity.

Work in the Horticultural Departments.

August generally affords the gardener a brief breathing spell in which a few days of leisure can be enjoyed. Make a visit to the mountains or seaside with the family, and return refreshed by the change of air and scene, and ready to resume the usual work with new vigor. During the dry season make preparations for laying drains where they are needed. Do up all little jobs now, and where brush and briars have been allowed to grow, cut and as soon as dry enough burn.

Orchard and Nursery.

The harvest of early apples, pears, and peaches, now demands attention, and the prices received will depend largely upon the manner of packing and assorting. If good, well colored fruit in convenient sized packages is received in good order, it will bring at any time more than enough extra price to pay for the extra care. Have all baskets, crates, and other needed packages, ready for use when wanted. The name of the grower should be placed on every package as a guarantee that the quality is as represented, and in a short time such packages will be sought after by buyers and dealers.

Drying.—Do not allow a surplus of any fruit to waste, preserve it by drying either in the sun or by fire heat. We have given in previous volumes various methods of drying which may be consulted.

Insects.—Examine the trees carefully to see that no late worms, caterpillars, or borers are at work. Borers should be probed out with a wire. In peach orchards as soon as the fruit is off, all hands are set at "worming," as this is called.

Budding will in many cases be performed during the present month. The proper time is when the bark of the stock lifts readily and well formed buds can be had. Directions for budding have been given in previous volumes, and with a little instruction and practice, any intelligent boy can learn to do it successfully.

Thinning.—It is not yet too late to thin out fruit where the branches are too heavily loaded. If not thinned, some will break down.

Seedlings will require shade if they are expected to endure the hot, dry weather of this month. See last month's notes.

Weeds can only be kept down by frequently stirring the soil; if neglected, the labor is greatly increased. A horse with a cultivator or a harrow, can easily keep the weeds down in an orchard except immediately around the trees, where it will be necessary to use the hoe.

Seeds.—Gather tree seeds as they ripen, and store in earth or sand to keep from drying out.

Fruit Garden.

Blackberries will be just in their prime in the Northern States. If more are raised than can be used in the family, or sold, a supply should be dried or canned for winter. Never pick until fully ripe, as some varieties turn black long before they are fit to eat.

Dwarf Trees.—Pinch into shape and thin out the fruit when it is too thick.

Grapes.—If the canes have been properly tied up and pinched back, they will not require much attention now except a little pinching off of the laterals and the ends of the growing canes. If mildew makes its appearance, dust the vines with sulphur. Hand-pick caterpillars and other insects. If fine bunches are desired for exhibition, remove all imperfect berries and thin the others with a pair of sharp-pointed scissors. Young vines should be kept tied to stakes or trellises, and all surplus shoots removed.

Raspberries that have done bearing should have the old fruiting canes cut out and burned; leave but 3 or 4 of the new canes, which should be cut back at the hight of 4 or 5 feet, and the laterals to 18 inches.

Strawberries.—Set out new beds with runners that have been struck in pots, and keep the old beds clear of weeds. Where young plants are not needed, cut the runners as often as necessary.

Kitchen Garden.

By this month almost everything will be planted, and the chief work is to keep the growing crops free from weeds. This is so easily done that there is no excuse for a weedy garden. Keep the horse and cultivator in frequent use among the larger growing crops, and the hoe and various hand-weeders among the others. Save seeds as fast as they ripen, selecting only the best and earliest for seed.

Asparagus.—All that can be done to this crop is to pull out the larger weeds that appear.

Beans.—Plant a few rows for late use and for salting down for winter. Limas need pinching when they reach the top of the poles. If the crop is larger than can be used, shell and dry for winter.

Beets.—Thin and keep the weeds down and loosen the soil with the hoe or hand cultivator.

Cabbages.—No crop better repays good cultivation; hoe often.

Carrots.—Thin and weed the late sowings.

Corn.—Save the earliest and best ears for seed. Cultivate and hoe as often as necessary.

Cucumbers for pickles need to be gathered every day, and salted down or sold. For the market assort them into three sizes, rejecting all over 3 or 4 inches long. Save seeds from the earliest.

Egg Plants.—Cultivate often, and go over daily and destroy the potato beetle. Place a shingle or handful of hay under the fruits, to keep them from the ground.

Herbs.—Cut as soon as in flower, tie in small bunches, and hang where they will dry.

Melons.—Pinch back the ends of rampant vines, and remove all fruit not likely to ripen. Those about ripening will be better if turned occasionally.

Onions.—Harvest as soon as the tops fall over; store in thin layers in a dry airy loft. If they can be marketed at paying prices now, it will be better than storing.

Peas.—Clear up the ground occupied by late peas, and plant with flat turnips.

Potatoes.—Dig as wanted, and either bury the tops in the rows, or take to the pig pen to be made into manure.

Squashes.—Treat the same as melons, and hand-pick the squash-bug. When the leaves wilt, look for the borer, and cut it out with a sharp knife.

Sweet Potatoes.—Do not allow the vines to root at the joints, but move every week, and keep the weeds out.

Tomatoes.—Keep tied to the trellises, and thin out surplus shoots. Destroy the large green worm.

Turnips.—Sow flat sorts in vacant spots, and thin out ruta-bagas.

Flower Garden and Lawn.

The dry weather of early summer has in many places told severely on lawns, and in many the grass has turned a sickly yellow. It is better not to cut the grass in such places, but leave it to protect the roots.

Dahlias, and other tall-growing plants will require stakes, as sudden wind and heavy rain storms will greatly injure the plants.

Layers of shrubs may be made for increasing the stock of such as do not readily root from cuttings.

Seeds.—Save the seeds of any desirable kinds. Many perennials only succeed when sown as soon as ripe, or at least after the intense heats are over.

Bedding Plants.—Keep these in shape by pinching, and keep clear of weeds.

Potted Plants set on the lawn or piazza, should be watered whenever they need it, else they will soon lose their healthy appearance.

Greenhouse and Window Plants.

Now is the time to thoroughly cleanse the greenhouses from insects, to do any needed repairs, and build all additions. Labor and materials are now at their lowest, and one cannot choose a better time for building any horticultural structure. Supply a plenty of water and air for the plants remaining in-doors, and give shade of some sort, to protect the foliage from injury by the sun.

Commercial Matters—Market Prices.

CURRENT WHOLESALE PRICES.

	June 13.	July 13.
PRICE OF GOLD	112 1-2	111 7-8
FLOUR—Super to Extra State	$4 00 @ 5 60	$3 25 @ 5 30
Super to Extra Southern	4 10 @ 9 25	3 25 @ 8 75
Extra Western	5 00 @10 00	4 25 @ 9 50
Extra Genesee	5 65 @ 7 25	5 30 @ 6 75
Superfine Western	4 00 @ 4 50	3 00 @ 4 00
RYE FLOUR	3 50 @ 5 20	3 50 @ 5 15
CORN-MEAL	2 75 @ 3 45	2 60 @ 3 35
WHEAT—All kinds of White	1 30 @ 1 55	1 20 @ 1 45
All kinds of Red and Amber	1 10 @ 1 45	80 @ 1 28
CORN—Yellow	60 @ 64	55½@ 60
Mixed	52 @ 60	47 @ 57
White	60 @ 66	56 @ 62
OATS—Western	35 @ 48	30 @ 43
State	40 @ 49	37 @ 44
RYE	72 @ 93	72 @ 88
BARLEY	Nominal.	Nominal.
HAY—Bale, ℔ 100 lbs	70 @ 1 00	60 @ 1 00
STRAW, ℔ 100 lbs	60 @ 1 10	60 @ 1 15
COTTON—Middlings, ℔ lb	12 @ 12¼	11¾@ 11⅝
HOPS—Crop of 1875, ℔ lb	10 @ 17	10 @ 17
FEATHERS—Live Geese, ℔ lb	30 @ 60	30 @ 60
SEED—Clover, ℔ lb	16 @ 16½	Nominal.
Timothy, ℔ bushel	2 75 @ 2 85	2 70 @ 2 90
FLAX, ℔ bushel	1 50 @ 1 55	1 50 @ —
SUGAR—Refi'g & Grocery ℔ lb	6⅝@ 9	7½@ 9½
MOLASSES, Cuba, ℔ gal	28 @ 37½	28 @ 38
New Orleans, new crop, ℔ gal	45 @ 60	45 @ 60
COFFEE—Rio (Gold)	14¾@ 17¾	15½@ 18¼
TOBACCO, Kentucky, &c., ℔ lb	6 @ 25	6 @ 25
Seed Leaf, ℔ lb	5 @ 35	5 @ 35
WOOL—Domestic Fleece, ℔ lb	20 @ 46	18 @ 40
Domestic, pulled, ℔ lb	20 @ 38	16 @ 35
California, clip	12 @ 25	10 @ 25
TALLOW, ℔ lb	8⅝@ 8¾	8½@ 8⅝
OIL-CAKE—℔ ton	40 00 @41 00	36 50 @39 50
PORK—Mess, ℔ barrel	19 50 @ —	— @20 00
Prime Mess, ℔ barrel	Nominal.	19 00 @19 50
BEEF—Plain mess	10 00 @11 00	10 00 @11 00
LARD, in trcs. & bbls, ℔ 100 lb	11 60 @11 65	11 00 @11 25
BUTTER—State, ℔ lb	20 @ 28	15 @ 26
Western, poor to fancy, ℔ lb	13 @ 26	12 @ 24
CHEESE	4 @ 11	4 @ 10¼
BEANS—℔ bushel	75 @ 1 45	40 @ 1 40
PEAS—Canada, in bond, ℔ bu	— @ —	— @ 99
EGGS—Fresh, ℔ dozen	11 @ 11½	14½@ 18
POULTRY—Fowls	11 @ 18	13 @ 18
Capons, ℔ lb	— @ —	— @ —
Turkeys—℔ lb	8 @ 16	13 @ 18
Geese, ℔ pair	1 00 @ 2 50	1 25 @ 2 50
Geese, ℔ lb	— @ —	— @ —
Ducks, ℔ pair	50 @ 1 12½	60 @ 1 12½
Ducks, ℔ lb	— @ —	— @ —
Roosters, ℔ lb	6 @ 7	8 @ 10
Chickens, spring, ℔ pair	50 @ 1 00	— @ —
Chickens, dry pick'd lb	25 @ 35	20 @ 33
PIGEONS, wild, ℔ dozen	50 @ 75	90 @ 1 37½
" tame, ℔ dozen	1 12½@ 2 00	1 50 @ 1 75
LETTUCE, ℔ bbl	— @ —	40 @ 75
CUCUMBERS, ℔ bbl	— @ —	1 50 @ 2 50
TURNIPS ℔ 100 bunches	2 50 @ 4 00	3 00 @ 5 00
BEETS, ℔ bbl	— @ —	1 00 @ 2 00
STRING BEANS, ℔ bag	75 @ 1 25	75 @ 1 75
CAULIFLOWER, ℔ bbl	— @ —	1 50 @ 6 00
CABBAGES—℔ 100	— @ —	5 00 @ 8 00
" ℔ bbl	1 00 @ 1 50	— @ —
ONIONS—℔ bbl	— @ —	— @ —
" ℔ crate	1 00 @ 1 25	— @ —
POTATOES—New ℔ bbl	2 00 @ 7 00	2 00 @ 4 50
SWEET POTATOES—℔ bbl	— @ —	— @ —
BROOM-CORN	3 @ 10	3 @ 10
WATERMELONS, ℔ 100	— @ —	25 00 @50 00
GREEN PEAS, ℔ bag	— @ —	50 @ 1 00
TOMATOES, ℔ crate	75 @ 80	60 @ 75
RHUBARB, ℔ 100 bunches	1 00 @ 2 00	1 00 @ 2 00
RADISHES, ℔ 100 bunches	50 @ —	— @ —
APPLES—℔ barrel	1 50 @ 3 75	1 50 @ 3 50
SQUASH, ℔ bbl	— @ —	1 25 @ 1 50
ORANGES, Florida, ℔ bbl	— @ —	— @ —
GOOSEBERRIES, ℔ bush	— @ —	1 00 @ 1 50
CURRANTS, ℔ lb	— @ —	— @ 3
CHERRIES, ℔ lb	— @ —	5 @ 10
STRAWBERRIES, ℔ quart	3 @ 10	— @ —
BLACKBERRIES, ℔ qt	— @ —	3 @ 15
RASPBERRIES	— @ —	3 @ 5
WHORTLEBERRIES, ℔ bush	— @ —	2 00 @ 3 50
MAPLE SUGAR, ℔ lb	6 @ 10	6 @ 10
MAPLE SYRUP, ℔ gallon	65 @ 1 00	70 @ 1 00

Gold has been up to 112¾, and down to 111¾, closing July 12, at 111⅞, as against 112½ on June 12, and 112⅜ on May 13....Breadstuff movements have been much less extensive, since our last; and with improved crops and depressed market reports from Europe, free arrivals here, increased urgency to close out supplies, lower gold, and firmer ocean freights, our market has been quoted much lower, and toward the close, very unsettled, with less of an export inquiry for Flour and Grain, and a comparatively moderate home trade call. Much of the Wheat and Corn received here, during the month, arrived in poor order, which the very warm weather tended to aggravate, and thus render the sale of such stock extremely difficult, and, as to values, more or less demoralizing. Considerable quantities of Flour have been spoiled by the warm weather, and this also added to the depression. At the close, receivers generally were eager to realize on their holdings; and, with little of an encouraging tenor in the advices by cable, prices ruled weak, even on the modified basis. Sundry lots of new Winter Wheat (of fine quality) from Texas, Tennessee, Virginia, and Delaware, and of new Flour from St. Louis, Tennessee, etc., have come to hand, since our last. New crop of White Oats of choice quality from New Jersey (Monmouth Co.) brought 44 cts. on Tuesday, July 11....Provisions, and Cotton, have been less active, and lower and irregular in price....Wool has been attracting more attention, and toward the close on a steadier basis as to prices for desirable lots of domestic product....Tobacco has been fairly active, and generally firm in price....Hay, Hops, and Seeds, have been less sought after, and quoted easier. ....Naval Stores and Petroleum have shown more firmness, with a better demand noted....Ocean Grain freights have been more active, at stronger rates. Grain rates by steam to Liverpool, closed on the 12th July at 9*d*; to Glasgow at 8½@9*d*; to London at 9*d*; to Liverpool, by sail, at 8*d*: London, by sail, at 8½*d*. per bushel. Provisions by steam to Liverpool, 40*s*.@50*s*. per ton: Cotton at $^5/_{16}$*d*. ℔ lb. Grain tonnage for Cork and orders, at 6*s*.3*d*.@6*s*.6*d*. per quarter. Grain rates from San Francisco to Liverpool, for the maturing crop, quoted at 62*s*.6*d*.@67*s*.6*d*.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending July 13th, 1876, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	331,000	4,937,000	2,405,000	239,000	141,000	1,216,000
24 d's *last* m'th	269,000	5,417,000	1,311,000	357,000	205,000	1,067,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	363,000	2,376,000	2,613,000	113,000	—	986,000
24 d's *last* m'th	329,000	4,154,000	3,101,000	381,000	15,000	1,111,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1876	331,000	4,937,000	2,405,000	239,000	141,000	1,216,000
24 days 1875	279,000	8,918,000	2,312,000	23,000	—	815,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1876	363,000	2,376,000	2,613,000	113,000	—	986,000
24 days 1875	417,000	5,391,000	1,985,000	31,000	—	2,117,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
July 10, 1876	2,189,729	296,727	61,508	15,675	1,014,047	482,009
June 9, 1876	1,121,293	625,818	3,969	15,674	885,012	507,157
May 8, 1876	1,563,826	172,090	16,365	33,201	437,387	450,613
Apr. 10, 1876	3,993,974	232,140	68,429	200,381	706,282	436,942
Mar. 6, 1876	4,473,653	302,026	82,562	441,078	757,457	377,278
Jan. 10, 1876	5,892,293	663,982	100,711	325,191	1,080,300	307,438
Dec. 7, 1875	5,878,036	816,962	99,908	305,961	1,252,005	258,363
May 11, 1875	969,804	1,542,924	16,124	16,537	545,209	229,055
Jan. 11, 1875	3,675,122	1,019,900	50,889	191,470	877,014	145,647

4. *Exports from New York, Jan. 1, to July 12.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1876	1,043,422	15,760,393	8,398,861	54,623	28,072	272,584	610,920
1875	923,289	10,638,507	6,008,198	105,687	165	61,840	218,169
1874	1,182,136	20,601,890	10,185,019	513,622	240	62,603	253,763
1873	658,482	6,377,645	6,531,315	199,616	19,226	17,578	53,030
1872	418,080	4,202,506	11,967,765	366,829	22,656	17,215	115,066
1871	963,831	8,193,157	4,824,872	43,018	83,679	14,889	—
1870	880,626	7,691,408	164,468	65,734	—	9,788	—
1869	605,950	6,260,258	1,481,849	68,536	—	42,257	—
1868	481,663	2,956,532	4,041,602	158,093	—	30,368	—

5. *Tide-water Receipts at Albany, from opening of navigation to July 1:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
1876	10,009	5,809,900	781,700	243,500	91,000	1,049,100	193,900
1875	11,700	3,217,700	824,700	53,500	—	755,600	377,900
1874	17,900	8,618,000	4,190,000	174,100	74,100	996,200	—
1873	52,100	3,556,700	3,518,100	293,100	12,200	810,100	—
1872	32,200	1,682,800	6,516,600	203,100	451,500	1,561,200	—
1871	78,700	4,328,300	4,258,000	46,200	40,100	999,600	—

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
June 19	8,184	24	3,983	18,613	19,019	48,823
June 26	9,872	90	2,912	25,402	24,125	62,401
July 3	8,067	59	3,593	27,667	20,717	62,103
July 10	8,808	61	2,087	21,229	15,731	50,919
Total for 4 Weeks	34,931	234	12,575	95,911	79,595	253,246
do. *for prev. 4 Weeks*	37,057	241	17,352	97,164	88,899	240,713
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	
Average per Week	8,732	58	3,144	23,980	19,898	
do. do. *last Month*	9,264	60	4,838	24,291	22,224	
do. do. *prev's Month*	9,129	50	3,214	16,185	21,085	

Beeves.—The hot weather of the past two weeks, which has been unprecedented for more than 30 years, has not been in favor of an improved market. On the contrary, the tendency has been steadily downwards, and as we close our report, we have no improvement to note in prices, although the general feeling was more lively and encouraging. Shipments to Europe continue, 290 head having been sent out to Scotland last week; this destination having probably been chosen that the beef may appear in the London market as choice Highland, for which the quality is good enough. How long a business can continue on such a basis, however, is a question. Prices at the close were 9@9¾c. per lb. for native steers, 55@56 lbs. per gross cwt., and 10@10½c. for prime beeves of 56@57 lbs. estimated per cwt.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
June 19	7 @10¾c.	9 @10 c.	9½c.
June 26	7 @10½c.	9 @ 9¾c.	9½c.
July 3	8½@10½c.	9 @ 9¾c.	9½c.
July 10	8½@11 c.	9 @10 c.	9½c.

Cows.—The market has been dull and without change at $40@$50 each for poor cows, and $60@$75 for choice, calves included....**Calves.**—The business has been fair, and with light receipts, prices have improved. Poor calves have sold for 4@5c. ℔ lb., and veals at 7@8¾c. ℔ lb. for N. Y, Jersey, and Pennsylvania....**Sheep and Lambs**—There has been a very slow demand for this stock, especially poor qualities—good stock has sold freely. The prices paid at the close were 4½@5½c. ℔ lb. for sheep of 75 to 102 lbs., and 6½@9½c. ℔ lb. for lambs, according to quality; Virginia selling for the lower quotation, and New Jersey 68-lb. lambs at the higher. ....**Swine.**—Receipts of hogs for the first half of 1875, were 754,548, and for the same period in 1876, 597,319. This is a large falling off with which to meet a fair average demand, and should be taken into account in estimating probabilities. The market has improved during the past month, closing with a light supply at 8@8½c. ℔ lb. for city dressed, and 8¾c. for light pigs.

Prices of Feed.

Bran, per ton	$18.00@ $20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1, Peruv. Guano (6.80 p. ct. ammonia) ℔ ton	$56.00
" " (Rectified), per ton	61.50
Mapes' Nitrogenized Superphosphate, per ton	45.00@ 50.00
" Plain Superphosphate (mineral), per ton	30.00@ 35.00
" Bone Superphosphate, per ton	40.00@ 45.00
" Prepared Fish Guano, per ton	35.00@ 40.00
Fish Guano (crude in barrels), per ton	24.00
Bone Black, per ton	25.00@ 28.00
Bone Flour, per ton	40.00@ 45.00
Rawbones Ground (pure), per ton	33.00@ 40.00
Rough Bones, per ton	22.00@ 25.00
German Potash Salts, (25@35 per cent), per ton	20.00@ 25.00
Gypsum, Nova Scotia, ground, per ton	8.00@ 9.00
" In barrels, per bbl	1.25
Wood Ashes, per bushel	16 c.@18 c.
Nitrate of Potash (95 per cent.), per lb	8½c.@ 9 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2¾c.@ 3¼c.
Nitrate of Soda, per lb	4 c.@ 4½c.
Sulphate of Ammonia (25 per cent.), per lb	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia	$3.00@ $ 4.00

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ N.B.—The New Postage Law.—On account of the new postal law, **which requires pre-payment of postage by the publishers**, each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Our National BAZAAR this month, contains the usual assortment of good things, advertised by trustworthy men. It will always pay any one to look all through the advertisements, and see what is offered, by whom, at what price, etc. Many a man has got a valuable new idea from seeing what others say about business matters, which has started his own thought in a profitable direction. When writing to any of our advertisers, for information, catalogues, etc., or sending orders to them, please let them know that you belong to the great *Agriculturist* family, and you may expect and will receive good treatment. Our advertisers know that we carefully exclude any one who does not promptly perform what he promises in his advertisement.

Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of

Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

Crib-Biting.—"S. G.," Sheboygan Co., Wis. Crib-biting is often a habit, but may be caused by a disease. Indigestion occasions a constant irritation and uneasiness, which may impel the horse to take hold with the teeth, and stretch the neck as a means of relief. From this grows the habit of crib-biting and wind-sucking, which ceases when the cause is removed. As a remedy give the horse in his feed, daily, for a few weeks, one dram of copperas, and half an ounce of ground ginger, and feed him upon cut feed, with crushed or ground grain, and an ounce of salt in each feed.

The American Institute of the City of New York will hold its 45th annual exhibition this fall, opening on the 6th day of September next, and continuing until late in November. This exhibition promises to be unusually interesting, inasmuch as special effort is being made this Centennial year to have the leading industrial operations carried on upon the premises, and a special award of a gold medal is offered for this year, to be known as the "Centennial Medal." The American Institute is the oldest of all societies of its kind now in existence, and is not in any sense a private corporation, its earnings being devoted by its charter to the encouragement of home industries. For blanks and all information, address General Superintendent, American Institute, New York City.

Concrete Houses.—"J. McC.," Monroe Co., Mich. Concrete houses are very dry and healthful, the walls being porous, are very effective non-conductors of heat. They are also durable when properly built. We know of no objections to them where the materials can be easily and cheaply obtained.

Crude Petroleum as a Priming.—"W. S.," St. Francisville, Ill. Crude petroleum needs no mixture to give body when used as a priming coat. It soaks into the wood very thoroughly, and is apt to leave upon the surface any solid matter that may be mixed with it. It fills the pores of the wood, and the surface is left in good condition for a coat of oil paint.

Root Cellars and Pits.—"S. H.," McDowell Co., Va. Descriptions and engravings of houses and cellars for storing roots, were given in the *American Agriculturist* for October, 1873, and in the same number was given a method of keeping roots in pits. Back numbers can be had for 15 cents each.

To Get Rid of Sassafras.—"J. W. M.," Queensville, Ind. Sassafras bushes may be eradicated by deep plowing and harrowing, by which the roots are brought to the surface, and may be picked up. Any sprouts which may grow after this, can be kept down by planting potatoes and corn, and keeping them hoed. The sprouts will be weak, and if kept hoed down perseveringly, may be killed out in two years.

Trial of Mowers in Switzerland.—Adriance, Platt & Co., inform us that at a field trial of mowers, held at Luzerne, Switzerland, the Buckeye, of their manufacture, was awarded two first prizes in competition with several other first class machines.

Disease of the Mouth. Aphtha.—"P. O. T.," Preston Co., W.Va. Cattle and sheep are subject to a disease of the blood known as aphtha, which appears as an eruption of blisters upon the lips and tongue. The blisters break, and the raw surfaces become very sore and painful, preventing the animal from eating. The proper treatment is to give half-a-pound to a pound of Epsom Salts in one dose, in some linseed gruel, and afterwards wash the mouth with salt water, or place a handful of salt in the mouth twice a day, until the sores heal. The food should be linseed or oatmeal gruel.

Plum Sprouts Upon a Willow.—"J. B. Z.," Tremont, Pa., sends us leaves of a plum-sprout which grows out of the stem of a willow, of which the leaves are also sent. One plum sprout appears about 5 inches and the other 3 feet above the base of the willow. We have no doubt that a careful examination will show that the plum has been in some manner included in a crack or split of the willow, and that when the tree is cut down, the plum will be found upon its own roots.

CENTENNIAL

TRIAL TRIP!

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AT LEAST
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Every Trial Trip Subscriber, who sends 75 cents for the *American Agriculturist* for six months, as above, may also select one of the **BEAUTIFUL CHROMOS**, offered on 4th cover page, and it will be sent to him **free**, as there offered, (on forwarding the small sum named [25 cts.] for mounting, packing, and delivery.)

☞ **Thus, a single dollar will secure the paper post-paid for six months, and a Mounted, beautiful Chromo, delivered,—a picture which would be an ornament in any home.**

Proper Heat for Incubation.—"O. M.," Jackson, Mich. The greatest heat that can be permitted in an incubator, is 102 to 104 degrees. It will not injure the eggs if they are left to cool down to 90 degrees, or even less, for a few hours occasionally, except when the chick nears maturity. At this period hens keep their nests closely, but at other times leave them for hours at a time. A heat of 109 degrees would be fatal to the eggs.

The Exhibition of Mowers at Philadelphia.—The exhibition of mowing machines in connection with the Centennial Exposition, took place a few miles from Philadelphia. It was not competitive, and 23 different makers were represented. The grass was of the easiest kind to cut, being clear timothy, rather thin, and standing up perfectly straight. No difficulty was met with, until the chairman of the International Jury on Implements, ordered the grass to be rolled, the roller being drawn ahead of the machines. To pick up this laid grass was found to be difficult for most of the machines, and impossible for some of them, only one or two making fair work. Some of the newer machines, with unusual motive appliances, attracted favorable notice. These were without gearing altogether, as the "Haymaker," exhibited by Otis Brothers, or with a reciprocating screw in place of gear wheels, as the Reciprocating Screw Machine of Goodwin & Co. The rolling of the grass was a novel and unexpected test, and one that could hardly be met with in actual practice here; yet the perfect machine ought to be able to pick up grass however badly it may be laid.

Blight and Electricity.—"H. S.," Oneida Co., N. Y. Your "true theory" of blight is a very old one, as it has been ascribed to electricity many years ago. Your citing the well-known phenomenon of St. Elmo's Fire as proof that "trees conduct electricity," shows a want of familiarity with electrical laws. We can not suggest a trial of the proposed remedy, as it is founded upon an entirely incorrect assumption.

Weight of Yearling Bullocks.—"C. O. C." We do not remember of any bullock, 18 months old, reaching a greater weight than one mentioned in Youatt's British Cattle, the four quarters of which weighed 945 pounds. This would give a live weight of about 1,600 pounds.

Guessing at a Plant.—"J. H. S.," Atlanta, Ga., writes: "I found in the street a Convolvulus, which, being planted, gave me a double flower, something like a pink rose."—Had he sent a specimen, we could be sure, but now we can only guess that it is the *Calystegia pubescens*, sometimes called "Rose Morning-glory," and a very pretty thing it is, but one which we would advise our friend to get rid of as soon as possible, as a more troublesome weed does not exist.

To Manage a Corn-Stubble.—"C. N. A.," Denville, N. J. If a corn-stubble is to be sown to wheat, the corn should be removed from the ground, and the stubble plowed under. A frequent method is to sow the seed upon the stubble, and then cover it by plowing a light furrow; the surface is then harrowed, or may be left rough, which, we believe, is best.

Bloody Milk.—"S. H. D.," Council Hill, Iowa. Blood in the milk may be due to an inflamed and congested condition of the udder. It may be sometimes cured by giving the cow a cooling medicine, such as 8 to 12 ounces of Epsom salts, and frequently bathing the udder with cold water.

Introducing New Plants.—"C. W. G.," Andover, Mass., asks if the cotton of Mantchooria, where the climate is as cold as that of the New England States, would not succeed in those States. Temperature is but one element—though an important one—in the case, and while we may guess at the probabilities, we can not be at all sure that a plant will succeed in a given locality until it is tried. The same correspondent asks why it would not be a good thing to try the Kerguelen's Land cabbage. It would be well to *try* it, if one could get the seeds, but as all the accounts of this come from mariners, who had long been without a "fresh mess," it is very likely that its excellence is overrated, and that upon actual trial this would be found vastly inferior to a good Savoy, or even a drumhead; we know from experience that the estimate of those who have been long deprived of vegetables and fruits, must be received with caution, as under such circumstances anything of the kind seems dilicious. We recollect an occasion, when having been deprived of all fresh vegetables for several months, that we came across a purslane, very much like our garden "pusley." This when cooked as an accompaniment to the daily salt pork, seemed at the time of supreme excellence. We doubt if the Kerguelen Land Cabbage would tolerate our hot and dry weather.

Harvard Examination for Women.—Harvard University has held annual examinations for women, at Boston, ever since 1874, and as will be seen by an advertisement, it is proposed to commence holding the examinations in New York also. There are many women who are pursuing studies by themselves or under teachers, either in special subjects, or the usual college course, who wish to know what progress they are making, and who propose to submit their acquirements to the test of an examination before the faculty of one of our leading universities. It will be surprising to many to learn that there are so many women engaged in the higher branches of study, as to make such examinations practicable, or desirable. Those who would know more about the matter, can learn full particulars by addressing Secretary of the Local Committee, No. 60 Fifth Av., N. Y.

Thomas' Fruit Culturist. — When Messrs. Wm. Wood & Co. first issued the new edition of this work, we called attention to the fact; we then understood that it was to be sold only through agents, and was not easily to be procured, we did not say much about it, but we learn that it is in the trade, and can be had by any one. Those who know John J. Thomas, need not be told that any work he may write, will be thorough and reliable in every respect. We have commended the former edition of the Fruit Culturist in the highest terms, and need only to say that the new edition is brought up to the times, and is one of the very best works of the kind. The publishers have done their part well, and it is handsome as well as useful. Sent by the Orange Judd Company for the price, $3.75.

The Amsden Peach.—This new variety appears to have this year substantiated the claims made for its great earliness. Some of our exchanges have noted its early ripening, and we have a letter from Mr. Wampler, of Carthage, Mo., who has been instrumental in introducing it, which states that it ripened there on June 27th, which is a little earlier than ever before. Mr. W. states that the severe cold of March 15th destroyed the peach crop generally, and only a few trees of the Amsden, in a sheltered garden, escaped. One specimen of the Amsden measured 7¼ inches in circumference. We shall be glad to hear how this new variety has done in other localities.

The Botany of California. —The Legislature of California having failed to provide for the publication of all the reports of the Geological survey of the State, several of the leading citizens have furnished the means for publishing the botanical report. The first volume is just out, a 4to. of over 600 pages, and contains the Polypetalous plants, by Profs. W. H. Brewer and Sereno Watson, and the Gamopetalous by Prof. Asa Gray. It is expected that the second volume, containing the remaining families, will follow in due time. A limited number of copies may be obtained at $6 each, on application to Prof. Watson, Herbarian of Harvard University, Cambridge, Mass.

Centennial Editions of Poetry, appropriately so-called because in the Centennial year the price is 100 cents. For the low price of $1, Messrs. J. R. Osgood, Boston, give in paper covers, but with fine paper, type, and illustrations, the complete poetical works of several authors. Those of Longfellow, Whittier, and Tennyson, have already been published, and others are to follow. Cheap, but choice.

Forest and Stream Hand-Book for Riflemen is the title of a neat little work by Major Geo. C. Starr, published by J. B. Ford & Co., New York. Members of the numerous rifle associations, and those about to form such organizations, will find this a most useful hand-book. Sent from this office for 50 cts.

Thistles.—"S. S. W.," Clearfield, Pa. The best time to kill thistles is the first time you see them. If you see them before they seed, so much the better, if not, mow or hoe them down as soon as possible. There is no better time than now, when they are in full growth. Cut them close to the ground, and the probability is that most of them will die from the shock to the roots and the uncongenial character of the fall weather for their recovery.

The Appletons and Science.—Messrs. D. Appleton & Co., besides publishing the admirable Popular Science Monthly, and various American scientific works, are doing much for the advancement of the various branches of science by their reprints. No sooner does a work of value appear upon the other side, than it is reproduced by this house, and at once placed within the reach of American students in an admirable form. Among the works recently reprinted by this house are "Air and its Relations to Life," by W. N. Hartley, an admirable work, and a useful one. The "Memoirs of Caroline Herschel," by Mrs. John Herschel; "The Warfare of Science," by A. D. White, and the "Short History of Natural Science," by Arabella B. Buckley. The last named work is noticed more in full elsewhere, the item being by Prof. Asa Gray, than whom no one is better able to place a proper estimate upon such a work. The "Science Primers" are continued by the publication of No. VIII, "Botany," by Doct. J. D. Hooker. The same house will soon issue under the title of "Darwiniana," the various articles contributed by Prof. Asa Gray, to different periodicals upon Darwin and his writings.

Market for Mohair.—Messrs. Hall & Turner, of the Jamestown Alpaca Mills, write to correct an impression that they are anxious to purchase mohair, or the wool of the Angora goat. They say that most of the mohair offered them is useless for combing, on account of ignorance in breeding the goats, and preparing the fleece. They have simply agreed to receive and sort the clip for some growers in California, Georgia, and Tennessee, and to dispose of the refuse after they have selected what they require for their own use. The present condition of business makes the sale of the discarded portion of the fleece very difficult.

Concrete Houses.—"E.," Villa Ridge, Ill. In the *American Agriculturist* of December, 1875, we gave a very full article upon building concrete houses, with many illustrations of the needed appliances. A natural mixture of sharp sand and pebbles will make very good material if used in proportion of eleven parts to one of hydraulic lime, or two of common lime. It would be well to screen the sand from the pebbles, and then add the pebbles to the ready mixed mortar made of one part of hydraulic lime, or two of common lime to four of sand.

Berkshire Swine Record, Vol. I.—We have received a copy of the first volume of the Berkshire Swine Record, which contains 1,090 entries, list of owners' names, and a handy index. The work of compilation has been very carefully performed by the editor, A. M. Garland, Esq., Secretary of the Berkshire Swine Association. We find on looking through the pedigrees but one evident error, this being in entry 606, a record of Manchester Lass 4th, 606, farrowed August, 1874, out of Manchester Lass 3rd (604), sire, Earl Granville, which conflicts with entry 610, a record of Manchester Lass 5th, farrowed May 18th, 1874, out of the same sow 604, and by the same sire, but both raised by different breeders. An error of this kind may give the editor of future volumes some little trouble in unraveling the intricate pedigrees of the descendents of so prolific an animal as a sow.

Cost of a Mowing Machine.—The cost of a mower to a good farmer is much less than to a poor one. A good farmer will keep a machine in good condition for a dozen years without any repairs but to replace a few bolts, the cutting blade, or a few knives, while others will use up a machine in three or four years. The difference is, that a machine may cost a good farmer $20 a year, and cut his grass for 25 to 50 cents an acre, while to a poor one, the cost is perhaps three or four times this amount. One of the most costly wastes upon the farm is the too common neglect of machinery.

Fruit Preserving Powder.—When an advertisement of an article of this kind appears in the *American Agriculturist*, that is of itself evidence that the article has been examined, that we know of what it is composed, and that, did we wish such an article ourselves, we should not hesitate to use it. Persons not knowing our rule in this respect, have made inquiries about fruit preserving powders. To such we would answer, that there are various articles that prevent fermentation in fruit; common salt will do this, but is not palatable in fruit; the inventor of the Fruit Preserving Powder has hit upon a substance that answers the same purpose that salt would, though much less is required, and is nearly tasteless. So far as known, it has no effect upon the system, and we have not hesitated to use fruit preserved by it.

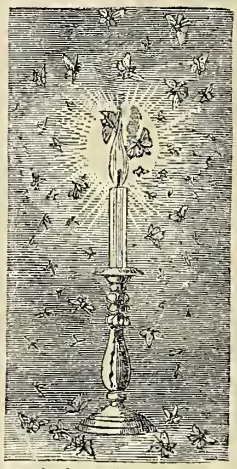
Sale of Horses at Woodburn, Ky.—The annual sale of Mr. Alexander's yearling horses at Woodburn occurred last month. The prices were higher than ever before, averaging $674 on 60 head. The gradual increase in value of this stock is shown in the following figures, which represent the averages for the produce of the choicest sires for the past six years:

	1871	'72	'73	'74	'75	'76
Lexington.	$1,145	$1,247	$1,368	$1,195	$1,755	$1,559
Australian.	387	1,077	832	753	958	882
Planet.....	402	774	514	300	383	483
Asteroid...	313	514	176	209	792	549

Sugar and Sorgho Machinery.—The Blymyer Manufacturing Co., Cincinnati, O., some years ago by their inventions and the appliances they introduced, added greatly to the wealth of the country, by enabling sorgho growers to convert their crops into a marketable product. They still continue to make sorgho machinery, and in addition they supply apparatus for manufacturing syrup and sugar from the true sugar cane. The cultivation of the cane in quantities for the home or neighborhood demand is rapidly increasing in all the Southern States, and this firm supply apparatus suitable for working up the crop of a few acres or that of a large plantation. We saw their Victor Evaporator at work last fall, turning out a beautiful product with little labor or fuel. Their catalogues illustrate the apparatus in full.

Fine Lilies.—Beach, Son & Co., Seedsmen, No. 7 Barclay st., not only sell lily bulbs, but raise fine lilies; their store has been gay for some time with the brilliant and fragrant flowers of these bulbs.

Sundry Humbugs.



This long continued heated term in the early part of July is not only debilitating to the body, but causes the mind to take anything but a cheerful view of matters. As we took up the accumulation of letters of complaint and inquiry, the reports, circulars, pamphlets, and all the rest of the materials that accumulate and make up our monthly Budget of Humbug, the mercury was trying to see how far it could get above 90°, and the hot air swept in at the window in a most discouraging manner. "After all," thought we, "what is the use? What good does it do to try to help people by pointing out the traps and pitfalls set for them; here we have been for these many years showing up the folly of all lotteries, and the rascality of most of them, we have tried to keep the community from losing its money in swindling schemes, and risking its health by running after quack medicines and shyster doctors. We have kept at this, winter and summer, year after year, and yet on this torrid July day, here is a mass of evidence that swindling has not abated, and that there are scores of people who have been, or badly want to be, humbugged. It's all of no avail, and just labor wasted. Humbugs exist because they are a necessity in our state of society. We have fought the thing almost single-handed long enough. We make no progress, it does no good. The weather is too hot to bother with human folly and wickedness, and the Humbug column for August may go by."—It was with such thoughts that we pushed aside the disgusting budget and took up the morning paper for a change of thought. Our thoughts did change, and ran somewhat as follows:

"HURRAH FOR CONGRESS!"

"Now here is something worth while. 'The constant drop will wear the stone.' There is no fort so strong that it cannot be taken if the besieger keeps pegging away. It is refreshing to find effective help at last. No doubt that our unremitting exposures, winter and summer, have done much to bring this about. Steady work does tell after all. 'Hot?' Yes, a little, but one don't mind it much if he keeps at work. Excuse us, we can't stop to talk about the weather. Humbugs have to be written, weather or no weather."—Perhaps the reader will wonder what produced such a sudden change in our way of looking at things. It was an item under the Washington news, that Congress had passed

A BILL TO SUPPRESS LOTTERIES,

the second section of which reads as follows: "No letter or circular concerning lotteries, so-called gift concerts, or other similar enterprises offering prizes, or concerning schemes devised and intended to deceive and defraud the public for the purpose of obtaining money under false pretenses, shall be carried in the mail. Any person who shall knowingly deposit anything to be carried by mail in violation of this section, shall be punishable by a fine of not more than $500 nor less than $100, with costs of prosecution."—This has passed both the Senate and the House, and has gone to the President for his signature. It is hardly within the possibilities that "veto" will be placed upon a law so eminently proper. Deprive swindlers, of all kinds, of the use of the mails, and they will soon be forced to work for a living. It is a pity that the same penalties could not be made to apply to those papers which advertise such schemes. Still the above is a great step gained, and *if enforced*, will well nigh put an end to one species of the genus humbug. We shall get the entire act soon, and hope to

find that it is accompanied by ample provision for its enforcement.—Good for Congress!....We have in former articles given what seems to us sufficient reasons why lotteries that are conducted fairly, according to their terms, were an evil that should be suppressed; but the fact is that most of the schemes announced as lotteries, gift distributions, prize concerts, or by whatever name, are not conducted according to the rules governing lotteries, but are barefaced swindles. Prominent examples of these frauds are the

TOPEKA (KAN.) AND WYOMING LOTTERIES,

about which we have had scores of letters asking if we included them as humbugs. The "Kansas Farmer," which had heretofore done good work in showing up the Topeka lottery, in its issue of June 14, last, gives an account of the drawing, which in violation of the published conditions, was conducted *privately*; it says: "The concern was the most outrageous and unblushing piece of villany ever perpetrated under the guise of public charity." This shows what is thought of this lottery at home in Topeka. If any of those who have written to inquire about this lottery have lost the money they invested, we can quote for their benefit still further from the outspoken "Kansas Farmer," which says: "People who are such consummate fools as to place money in the hands of dishonest, irresponsible gamblers, expecting they would deal honestly with them, deserve to pay for the lesson they are sure to receive."

THE WYOMING LOTTERY, AT LARAMIE,

has already had some of its dark ways exposed in these columns. This is managed by one Pattee, who happened to visit Topeka, Kan., and the editor of the "Farmer" describes an interview with him, and says: "He seems to delight in boasting of his own villainy in swindling weak human nature. He said his conscience did not trouble him, that the people wanted to be humbugged, and it was his business to do it."—We regard this Wyoming as the most pernicious of all lotteries, as it is a sort of perpetual thing, and managed with great tact and perseverance, and its schemes find their way to the most remote places. The papers of New Brunswick state that some counties at that distant Province are flooded with the flaming circulars of this Wyoming scheme, and that the number of tickets reported to be sold is "something fabulous." One paper, the Sackville "Borderer," goes so far as to print a letter from some one claiming to be connected with the lottery, who proposes, for a consideration, to insure a prize at the next drawing, as he is in a position to do a little cheating. Sensible people do not need to be warned against all lotteries, however tempting their offers, and we are glad to know that the law has been passed to protect the weak and foolish from these swindlers.

SEVENTY-FIVE CENTS WORTH OF INFORMATION

was purchased by a young man in Ohio who sent all the way "down East," as far as Portland, Me., to get it. He writes: "I sent 75 cents to him about a year ago for a watch chain which was to be as *good as gold*, and wear as long and as bright. When the chain came it was nothing but brass,"—Our correspondent paid 75 cents to learn that cheap jewelry, no matter by what name it may be called, is cheap, and that people even down in Maine do not give more than 75 cents worth for three-quarters of a dollar. As the concern advertises largely, and publishes many circulars, with engravings of the jewelry, which are expensive, whatever the articles themselves may be, it is probable that this 75 cent chain itself did not cost the sellers over 25 cents, if as much.

MORE CHEAP BUTTER.

The "Golden Butter Compound" seems to have fizzled out; we have sent several times to a place advertised as a "depot," but no one is to be found. It is just a place to receive letters, for such chaps work at arm's length, and avoid coming face to face with purchasers. Still cheap butter is not to die out, for there is a chap who now makes two pounds of butter out of a pound of butter and a pound of sweet milk, by the aid of "The Compound Vegetine Extract of Helianthus Annuus," to which is graciously added for the benefit of the unlearned, "or common sunflower." The circular would not be complete without some chemist's certificates. There is one from the "Laboratory of College Department of School of Mines," which is so very high sounding that it does not appear necessary to state where the "Laboratory" is situated. This sunflower stuff has an advantage over the "Golden Butter Compound," as it will not only make two pounds of butter out of one, but it will, if we are to believe the circular, make two gallons of sperm oil out of one. All you need is one gallon of sperm oil, one gallon of lard oil, and some of the sunflower stuff, and there you are, with two gallons of sperm oil worth $5. This is all well enough, but a round-about way to get at it. Why not feed the sunflower stuff to the pigs, and turn them into whales at once, and thus quadruple at once the value of the hog products of the country? ....In all our experience we have never known such a dead calm

IN MEDICAL MATTERS.

For months we have not had a single new "sovereign remedy," and it is the Centennial year at that. Nobody has discovered a "Mother Noble." No young fellow and his wife have escaped from a seven years' captivity among the Indians, and like Eddie Eastman, brought off all the Medicine Man's secrets. No one has been strolling by the seaside in a fit of despondency, and picked up the bottle that contained a recipe that restored him to life. No one has been among the Andes and found a new "Bell Tongue," or discovered any more "Seven Barks." All is weary, stale, flat, and unprofitable.

TO ALL WHO CAN READ

and understand what they read! We have stated many and many times that we had no confidence in any secret medical compounds whatever, and that we regarded their use as a great evil. We have stated as many times that we have no confidence in any one who advertises anything beyond the fact that he is a physician or surgeon. In our view all who advertise their ability to cure certain diseases, who parade accounts of their cures, and certificates of those they have treated; those who will contract to cure a case for a certain sum, or who advertise that they will return the money if a cure is not effected; those who profess to have any medicine, treatment, or appliance that is better than any other—in short the whole brood of advertising doctors—are unfit persons to employ. They come within our meaning of the term quack, and as we would not, no matter what and where they advertise, employ one of them in our own family, we can in no manner aid or abet any one else in employing, consulting, or having anything to do with them. Though we have stated this so frequently and so plainly, we have one or more letters daily, asking about some medicine or "doctor" of the above classes, and we must once more repeat, and ask our friends to remember, that our acquaintance among medical men is confined to physicians of good standing in the community and among their professional brethren. We do not personally know a single one of those who call themselves doctors, who living in New York advertise and send their circulars to distant points. These chaps know our views too well to seek our acquaintance, and it is not possible for us to seek theirs. Therefore, all letters of inquiry about such persons must be met by the simple answer that we know nothing about them. To recapitulate, we can give no information about secret medicines, we do not know any advertising doctors; we do not associate with men who claim to cure fits, or women who advertise to cure catarrh; and we know nothing of the persons who offer gimcracks with which people may make risky experiments on their own eyes and ears. We know none of these, and similar people, personally, and only judge of them by the circulars they put out and the articles they offer. It is therefore useless to ask us if they will do as they agree. We don't know the parties, and all the answer we can make is to that effect. While we do not hesitate to criticise what these persons offer, and do so freely, we are not in the way of knowing anything about their private lives or pecuniary responsibility. We feel sure that the community would be better off in health and pocket, did all these medical pretenders get their living in some other manner.

LOOK OUT FOR THE LAW!

Since the foregoing was in type, we learn that the bill for excluding all lottery and gift circulars from the mails here referred to, has been signed by the President, and is now a law. Now let post-masters do their duty, and the lottery nuisance will be essentially abated. No doubt some of the swindlers will contrive to evade the law, as the business is too profitable to be given up without a struggle, but they have no longer any right to use the mails.

The Oaks of the United States; by Dr. GEO. ENGELMANN. Dr. Engelmann has a way of taking up some difficult subject, studying it for a long while, and finally coming out with something satisfactory, or as near to that as possible. This on our Oaks—just published in a pamphlet of 20 pages, reprinted from the third volume of the Transactions of the St. Louis Academy of Sciences—is one of the best of his papers, and the most important, practically, because it deals with such useful trees as Oaks. It is written in English, and plain English too; so that any one with a moderate knowledge of botany, or a little patience and perseverance in studying it out, can use and understand it. Dr. Engelmann puts the Oaks into a good natural arrangement, points out the best characters for distinguishing the species, and brings in some new ones, derived from the way in which the leaves are rolled up, plaited, or otherwise disposed in the buds. He shows that the popular division into black oaks and white oaks, from the hue and nature of the bark, agrees with a scientific classification; that the wood of the black oaks, of whatever kind, is always brittle, porous, and comparatively worthless; while that of the white oaks is tougher, heavier, more compact, and furnishes the only sorts fit for the wheelwright or cooper's use. He distinguishes 38 species, including one very peculiar Californian one, (*Quercus densiflora*), of an Asiatic type, and in many respects more a chestnut than an oak; and he describes six hybrids—*Quercus Leana* is one of these, a cross of scarlet oak with shingle oak but *Q. heterophylla*, the Bartram Oak, he decidedly ranks as a species.

John Gilpin.—The last effort of Mr. C. M. Crandall, of Building Block fame, is a toy to illustrate the various incidents of the wonderful ride of John Gilpin, as set forth by Cowper in his "Diverting History." We have found that a really good child's book or story usually has sufficient merit to be attractive to grown people who are fond of children, and we do not doubt that this toy will afford amusement to many men and women, who, under the guise of showing the children, will derive no little pleasure themselves from renewing their acquaintance with the "undying verse" of Cowper, and in helping the little ones compose the most fitting illustrations to its lines. The advertisement on another page gives an idea of the toy and its uses.

The Franklin Institute of Pennsylvania.—This very old and very useful Association has a reception room in the north-western end of the Machinery Hall at the Centennial Exhibition, where visitors interested in the mechanic arts are invited to call, and where some member of the Institute will be in attendance to give information in regard to the exhibition The Institute has a fine collection of apparatus from which some articles of historical interest have been taken to the reception room; among these is the electrical machine with which Franklin made his experiments.

Percheron Horses.—Messrs. E. Dillon & Co., of Normal, Ill., inform us that two members of their firm are now in France, selecting twelve stallions with which they expect to return about August 20th.

Peruvian Guano Sold by Analysis and Guaranteed.—A much needed and very satisfactory arrangement has been made by the agents of the Peruvian government for the sale of guano; the price is fixed according to the valuable fertilizing constituents as shown by analysis, and the quality is guaranteed. Each cargo of guano as it arrives is mixed, the stones taken out and the lumps crushed, by machinery. It is then analyzed and bagged, each bag being stamped with the analysis and the price, and the trade-mark with the word GUARANTEED. A specimen of the marking of the analysis of the first cargo sold under this arrangement, handed to us by Mr. Chas. V. Mapes, 158 Front St., N. Y., the retail agent, is as follows:

CARGO A.

Ammonia	6.80%	at $3.50	$23.80
*Soluble Phos. Acid	3.80%	at 2.00	7.60
*Reverted " "	11.50%	at 1.60	18.40
Insoluble " "	3.00%	at .40	1.20
Potassa (Phosphate)	3.70%	at 1.50	5.55
Estimated Retail Price			$56.56
Marked on Bags for Sale			$56.00

*33.40% of total available Phosphates.

This innovation is very important and desirable, and cannot fail to be satisfactory.

Patrons of Husbandry at the Centennial.—The Patrons have an encampment at Elm Station, on the Penn'a. Railroad, three miles west of the Exhibition grounds. It is really an enormous temporary hotel, at which guests can stay for a very moderate price. Some of our friends who have been there say that it is plain but wholesome, and it affords an excellent opportunity to those who wish to visit the Exhibition as economically as possible. Though started for the benefit of the Patrons, any persons of good character are received, there being accommodations for 4,000 guests. For circulars address Board of Managers, Patron's Encampment, Elm Station, Montgomery Co., Pa.

Rust Proof Wheat.—"E. B. D.," Houston Co., Texas. Messrs. Landreth & Sons, of Philadelphia, made some extended experiments last year with several varieties of wheat and oats suitable for the Southern States. In their published reports we notice that some of these wheats were remarkable for their healthy foliage and the most vigorous of these would probably resist rust much better than other varieties. The report in full can be procured of Messrs. Landreth & Sons, Philadelphia.

A Sow Fails to Breed.—"W. W.," Richmond Co., Va. A sow that has failed to breed for two years, may be considered as hopelessly barren, and should be fattened for slaughter. There is no drug or medicine that can be relied upon to produce any effective condition of fertility.

Raising Turkeys.—"N. G.," Saginaw Co., Mich. The most successful turkey raisers feed the chicks for the first few days of their lives upon finely chopped, hard-boiled eggs, and keep them from wandering off by cooping up the hen. After the chicks are a week old, scalded wheat, or oaten grits and cornmeal may be given, but until they are fully fledged, they should be carefully protected from rain storms and wet grass.

Annattoine.—"J. E. B.," Clayborne, La. If coloring must be used for butter, we would use a preparation of annatto in preference to anything else, as it is perfectly harmless, and gives an excellent and natural looking color. A preparation which is largely used in creameries and cheese factories, and is prepared with especial care for this purpose, is supplied by O. S. Bliss, of Georgia, Vt.

A Short History of Natural Science, and the Progress of Discovery, from the time of the Greeks to the present day. For the use of Schools and Young Persons: By ARABELLA B. BUCKLEY. With illustrations. Miss Buckley was Lyell's secretary during the later years of his life, and wielded the pen that put upon paper many of the matured thoughts of this most painstaking writer and well-balanced thinker. She was thus brought in contact with many of the leading scientific men of our day, and she "often felt very forcibly how many important facts and generalizations of science, which are of great value in giving a true estimate of life and its conditions, are totally unknown to the majority of otherwise well-educated persons." Her endeavor to supply this want is every way commendable. As reprinted by the Appletons, almost in *fac simile* of the English original, it is a 12mo. volume of 467 pages; the last thirty or more containing a series of chronological tables of the rise and progress of the various branches of science, and a full index. We do not speak at random when we pronounce this to be just the book which many readers of the *American Agriculturist* want, and would elsewhere search for in vain. It is "short," but well-proportioned, clear, simple, and thoroughly reliable.

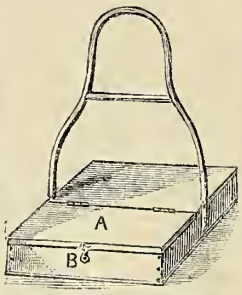
Business Pluck.—Some men are depressed by misfortune, but A. B. Farquhar, proprietor of the Pennsylvania Agricultural Works, is not of this kind. His large establishment at York, Pa., was destroyed by fire on the 7th of May—loss beyond the insurance nearly $100,000. On June 20th the Works were rebuilt, employing 200 hands, and prepared to execute all orders. The present factory is a fire-proof structure 120x200 ft., built in the most thorough manner, and furnished with the best machinery. Besides this, there are store-houses, detached shops, lumber yards, and other needed appliances, connected with one another by railways. Long before this notice appears, the establishment will be in full blast, turning out thrashing machines, horse-powers, and other specialties more rapidly than ever.

Firing Horses.—The practice of "firing" horses, although common, is one that is not advocated by the *American Agriculturist*, for the reason that it is painful, generally useless, and leaves an ugly blemish upon the animal. Evidence as to the easy possibility of avoiding this operation has been recently given by Mr. C. H. Maude, the manager of the stables of Queen Victoria, in which 200 horses are kept for use. Mr. Maude states that he has never used this operation in the 16 years during which he has superintended the royal stables, and finds that blisterings and rest produce better effects than the shrinking of the skin by "firing," for the purpose of producing a "natural bandage" and counter irritation.

Basket Items continued on page 313.

Poisoning Potato Bugs.

We have already given various devices for the application of Paris green in both the dry and wet state. No doubt any one of these, as well as other patented and unpatented appliances, will answer the purpose, but now that the application of this, or some similar poison, is likely to be a regular part of the farm work, it is very desirable that it should be done in the best possible manner. The first consideration in using the poison, should be safety to the operator; then come the questions of ease of application, low cost of apparatus, and economy of material. One of the best poison distributors that we have seen, and one which seems to meet all the above requirements, was invented by Mr. B. C. Arnold, of Chappaqua, N. Y., and is represented in the engraving. It consists of a shallow wooden box about 12 inches square and 3 inches high, made of ⅜-inch, or even thinner, stuff. The bottom of the box is covered with a piece of wire cloth, about as fine as that used for ordinary flour sieves; the edges of the wire cloth may turn up for half an inch all around, and be secured by nailing a thin strip upon each side. The upper part of the box has a hinged cover, A, which is fastened down closely by a hook, B. The handle is made of any convenient sapling, or other light, straight stick, bent in the form shown in the engraving, and securely nailed to the sides of the box; the cross-piece to the handle serves to keep it in shape, and may be used to hold the affair by if found more convenient. The Paris green and flour, thoroughly mixed, are placed in the box, which should be set upon a paper while it is being filled. The material will not pass through the wire cloth unless the box be roughly shaken or jarred. To use the affair, the operator takes it in one hand and a suitable stick in the other, and as he passes along the rows he gives the side of the box a tap wherever the presence of the bugs shows that poison is needed. The quantity deposited is regulated by the force of the tap, and as the box may be held down close to the vines, there is no danger of diffusing the poison in the air, or of scattering it where it is not needed. Generally the poison is most wastefully used, as the slightest dusting is all that is required. With a little practice one can dust two rows in once going through the field. Of course the use of this and all other methods of applying the poison, should be entrusted to an intelligent person who will work carefully and thoroughly. A little practice will teach such a person how high or low to hold the box, how hard to rap it, to pass by the vines where there are no insects, and only to use the poison where it is needed. In mixing the poison, the flour should be first sifted and the Paris green carefully stirred in, one part to 20 of flour, and the mixing continued until the whole is of an uniform color. We repeat, that the utmost caution must be used in keeping the poison and all utensils concerned in mixing and using it, in such a manner that no accident can possibly occur.



POISON DISTRIBUTOR.

Mr. Green, instead of patenting his useful invention, gives it for the benefit of his fellow farmers; he has found it so effective in his own experience, that he is desirous that it shall have the widest publicity, and on behalf of the potato-growers, we give him their thanks.

Agriculture at the Centennial.

The vast amount of work that has been done in gathering together the collection of soil products and manufactures therefrom, which are exhibited at the Centennial Exposition is almost astounding to contemplate. Now that it is done, it is not surprising that the result is open to the criticism that it might have been better arranged, or at least might have been differently arranged with advantage. If a farmer, desirous of studying the agricultural features of the show, were to exhaust himself—which he may easily do—in surveying the Agricultural building only, he would miss some of the best things to be found in the exhibition. Perhaps it is fortunate for him that it is so, because in the search for what he seeks, he will come upon many things he ought to see, and would otherwise fail to discover. For instance, we have noticed amongst other things, that a fine collection of wools from Tasmania, is in the main building, as is also a very large collection of cotton samples from Egypt. In the Kansas and Colorado building there is an excellent collection of products and specimens of natural history and geology. There is an interesting variety of specimens of ornamental and useful woods in the Ohio, W. Virginia, Indiana, Canada, and other State buildings, and so on at almost every point, one may see something of agricultural interest outside of the building specially provided for this department of industry. The Agricultural building itself is a vast show of something of everything, such as is found at the best of the State Fairs. Perhaps the most conspicuous thing to be noticed next to the implements being the industrial products of our vast corn crops in the shape of whiskey, contained in huge piles of polished barrels and transparent bottles, of immense quantities of lard in glass headed barrels, bottles, globes, and artistic shapes all of it white as snow; of a large and varied assortment of starch for both laundry and culinary purposes, and last, but not least, of pork, hams, shoulders, sides of bacon, sausages, and beef in many shapes. One gets a clear idea of the intrinsic value of this crop from the view of its various products here. In short, the exhibition is to be seen, it cannot be fairly described in any possible way.

Horticulture at the Centennial.

Fault-finding is easy, and at the great Exhibition, great and interesting beyond one's most extravagant anticipations, there is abundant room for fault-finding. We have heard it remarked that the horticultural display was poor, that there was but little there worth looking at, and we have noticed that these criticisms came from professional horticulturists, who sent nothing to the exhibition, and have taken no further interest in it than to visit it and find fault. If we compare the exhibition as it is, with what, considering the horticultural resources of the country, it might have been, we admit that it falls short. On the other hand, if we consider it as it appears to the thousands who daily look upon it, and for the first time in their lives, see rare and fine plants, it is very far from being a failure. As to the out-door portion, when we remember that this spring the grounds were untouched except to be desolated by the traffic and rubbish incidental to the erection of many vast structures, and were about as unpromising as a brick-yard, we must wonder at the industry and perseverance that has brought them to their present condition. So far as horticulture is concerned, we think that grave mistakes have been made in the organization, which has so subdivided the departments as to make it appear that horticulture comprises only ornamental gardening and the cultivation of exotics under glass. We do not understand that classification which places the strawberry and raspberry shows, and those of early vegetables, in the Department of Agriculture, and the same remarkable subdivision will place the great pomological display which it is proposed to hold in September, under the same department. We find no fault with the Department of Agriculture, but protest against the divorcement of Pomology and Horticulture. The inconsistency of this arrangement is shown in the fact that the judges of fruits thus far appointed are all prominent members of the Pennsylvania Horticultural Society, and are known as horticulturists, who in their business do not regard horticulture as confined to ornamental plants. The early fruit shows have been melancholy failures, and we trust that the fact that the proposed September show is to be held as something distinct from horticulture, will not merit the same verdict. Here is a chance for the greatest fruit show that the world has ever seen, if fruit-growers only choose to make it so. It is to be greatly regretted that the Pennsylvania Horticultural Society has determined to hold an exhibition of fruits at about the same time, and this will divert some of the exhibitors from the Centennial show. The Pennsylvania Society may have reasons satisfactory to itself for engaging in this rivalry, but fruit-growers elsewhere will regret it, and should see to it that the Centennial show does not suffer on this account. Let us have our great Centennial Exhibition of the fruits of the whole country, no matter under what department it may be held.

As to the display made under the Bureau of Horticulture, we have had time to examine only that in the Horticultural Building. This building is one of the finest structures upon the grounds, and consists of a spacious main hall, with four side halls which are built in the form of curvilinear lean-to conservatories. In the main hall are four large beds with a handsome fountain at the intersection of the walks. Here are planted out various palms, tree ferns, cycads, and other large specimens with attractive foliage, among which are intermingled interesting plants of lower stature. The general effect is pleasing, and the thousands who pass through the building are evidently gratified by it. There are a number of plants of economical importance, such as coffee, tea, banana, gamboge, and others, and the groups of people which gather about these show that the collection is both instructive and pleasing. The majority do not seem to know of the houses at the sides, where the choicer collections are placed, and these have comparatively few visitors. One of these houses is occupied by the collection of George Such, South Amboy, N. J., and well sustains his reputation as a grower of fine plants. We have not space to enumerate the plants which make this the finest of all the horticultural exhibits, but advise all the visitors to make it a point to see it for themselves.

Another fine collection is that of B. S. Williams & Co., Victoria and Paradise Nurseries, Upper Holloway, London, Eng. This contains many choice things, but the specimens coming from abroad are of course not so large as those in Mr. Such's lot. Messrs. W. & Co. have shown an enterprise in sending so far which is worthy of all praise, and when we consider that their plants were in the cases for 16 days, we may be sure that they are skillful packers as well as successful growers.

Lovers of ferns will not fail to examine those shown by S. B. Parsons & Sons, Flushing, L. I. It is a very large collection of specimens, which, though of medium size, are in the most perfect condition of health, and includes some of the most rare and beautiful of these interesting plants.

Messrs. Miller & Sievers, of San Francisco, Cal., show

some fine Cacti, excellent specimens of the new *Agave Shawii*, good tree-ferns and other plants.

John Dick, of Philadelphia, has a collection of good plants, and there are several smaller collections of which we do not remember the owners' names. Two excellent specimens of *Todœa superba*, charming filmy ferns under glass cases, are worthy of notice. One of the side houses is mainly occupied by Cacti, Euphorbias, and other stuff which may be appropriately classed as rubbish.

The florists appliances, the preserved and wax flowers and fruit, skeleton work, and other matters in various parts of the Horticultural building are worthy of inspection. We must leave a notice of the outside horticultural display until the abatement of the fierce heats allows of a more close examination.

Bee Notes for August.

BY L. C. ROOT, MOHAWK, N. Y.

As the honey yield draws to a close, which, in most sections, will be during this month, care must be taken to avoid too many partly filled boxes. Beginners are apt to continue to supply the place of full boxes with empty ones too late in the season. Instead of this, the number of boxes should be diminished, and in some cases those colonies which work in boxes most rapidly, should finish such as are partly filled by those that work less freely. Box honey that has been removed from the hives, and packed away as directed in the July notes, should be examined occasionally, and if the moth-worm is found in any, they should be either removed, or the boxes placed in a tight box, and fumigated with brimstone. Such boxes should be placed by themselves for home use, and when honey is taken from them for the table, all places disturbed by the worms can be cut away. A correspondent asks how the worms could get into his boxes, as he sealed them up tight when taken from the hive. The eggs were deposited in the boxes while on the hive, and sealing up closely aids the progress of the worm, by retaining the heat. Worms are seldom found in boxes, except such as contain bee bread.

In most sections swarms will not issue later than this month. Each swarm should be examined to ascertain if it has a laying queen. Young queens are liable to be lost when sometimes a swarm has no means of rearing another, and unless another queen is supplied, or brood from which to rear one is given, the colony will soon be worthless.

On page 254, of the July No., under the head of "Among the Farmers," your correspondent asks a plain, practical question, and justly heads his remarks, "Wasted Sweets."—"Why is it that we have no more bees?" is a question that claims the attention of every farmer. In attempting to give some of the reasons why so few bees are kept by farmers. I shall differ somewhat with your correspondent. If all who have attempted bee-keeping had been successful, the number of colonies throughout the country would be far greater than at present. The real answer to the question is, that the advance that has been made in bee-culture during the past few years, is not generally understood. The foremost reason that would be given by the inexperienced, would no doubt be *the fear of stings*. Were the present facilities for subduing bees, and the ease of ample protection properly understood, the fear of stings would become one of the least hindrances to bee-culture. Again, many farmers, as well as others, would keep a few swarms, if it were not for the idea that they must be watched during swarming time, and thus interfere with their general business. This belongs with many other absurdities of old time bee-keeping. Your correspondent speaks of the ease of preventing loss of swarms. If he means glass during winter and spring, I think he is in error. This is the knotty point of bee-keeping. Not that the loss may not be prevented in a great degree, but he should have said, with *earnest care and attention*. He suggests that it is not safe to move bees less than three miles. Many can testify to having moved them one mile, and even less, with entire satisfaction.

I am aware that in urging all to investigate the interests of bee-keeping, I expose myself to criticism. We are told by those interested in the production of honey, that in so doing we are working against our own interest. I can hardly believe their view correct, and if it were, we should hardly be justified in remaining silent, while, as your copresponden truly says, "forage for bees abounds, and acres of honey are hardly sipped." Let me urge then that the readers of these notes procure some standard work on bee-culture, and learn for themselves what, as the late M. Quinby expressed it, "they are losing, not for the asking, but for the taking." Besides it is an interesting pursuit, so much so, that if those who study it never keep a bee, it will be time well spent to learn their natural history.

Let me not be understood as conveying the idea that it is a business in which any one can be successful without persevering study and effort, and if one engages in it extensively, he will find plenty of hard work. Bee-keeping as an exclusive business, and the care of a few as amusement or for home supply, involve altogether different methods of handling and practice. While few are adapted to pursue bee-keeping on a large scale, almost any one can succeed with a few colonies.

I would here repeat the suggestion made in a former number, that questions of general interest be forwarded to me to be answered through these columns.

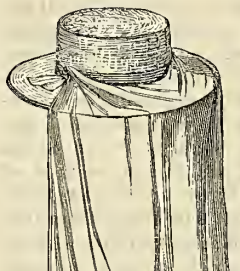
Strawberries—How to get a full Crop in ten Months from the time of Planting.

BY PETER HENDERSON.

Our success in the culture of Strawberries, by the system of layering the runners in pots, has been so complete the past season, that even at the risk of repeating some of the directions already given, I will briefly state how it is done. In July of 1875 we threw out every other row of the plants that had fruited, thus leaving the rows four feet apart. This space between the rows was deeply plowed three or four times, so as to thoroughly pulverize it. It was then leveled with a rake, and the runners from the old plants, as soon as they began to grow freely, led out upon it. Flower pots, 2½ inches in diameter, were filled with and plunged into the soil up to the brim, and the layers or buds at the ends of the runners were placed on the earth in these pots. To keep the runners in place, we use small flat stones, which are laid upon them, and these also help to mark the places where the pots are sunk. The layers so placed on the soil of the pots are not only kept down, but are kept moist by the stone, and root rapidly. In two to four weeks from the time the operation is done, the plants are well rooted in the pots, and ready to be set out. Our plants last year were set out from the pots the first week in August, not a single plant died, and all grew freely. They were set in rows two feet apart, and 18 inches between the plants, and all the runners made were at once pinched off, so that by the end of the season each plant was nearly one foot in diameter, having finely developed "crowns" for next season's fruiting. The ground had been first prepared before planting by plowing and subsoiling to the depth of 18 inches, turning down at the same time 3 or 4 inches of well-rotted manure, from the horse or cow stable. Of course the ground was kept entirely clear of weeds. By the middle of December, the whole bed of strawberry plants was covered with salt-meadow hay; (straw, leaves, or any thing similar, will do as well), to the depth of two or three inches, entirely covering up the plants and soil so that nothing was seen but the hay. By April the plants showed indications of growth, then the hay was pushed a little aside, and by May, the full developed plant showed on the clean surface of the hay. This mulching is indispensable to the best culture, as it protects the plants from the cold in winter, keeps the fruit clean, and at the same time keeps the roots cool by shading the soil from the hot sun in June. The crop began ripening June 10th, and was at its best on June 15th; the yield was perfectly enormous. Each plant of the "Seth Boyden" variety averaged a quart, many of the berries being nearly an ounce in weight. In a trial of some 15 varieties, our choice was for the following, as presenting the best combination of qualities: "Seth Boyden," earliest and largest, and fair flavor; "Monarch of the West," late, large size, and fine flavor; "Chas. Downing," medium early, and of medium size, fine flavor. Our soil is heavy clayey loam, with a stiff subsoil. I am convinced that the most profitable way to grow strawberries, either for market or for private use, is by this system. Any handy man can place 2,000 layers in pots in a day. Each layer, in ten months, makes a plant that gives its full crop of fruit. The labor is less than by any other method, because nothing more has to be done after planting, but to keep the crop clear of weeds, and pinch off the runners for only six weeks of the year, while with beds planted in spring, in the usual way, you have nearly six months work on them, with no better plants in the fall. Besides, when ground is limited, there is plenty of time by this system to throw out the plants that have fruited in June, and plant the same ground over again in August with the young plants from pots. That is really our own practice, for the space we devote to strawberries is less than an acre. In our experiments, the past season, we found that no variety which had been left two seasons to fruit, produced so large a crop as the young plants, and the berries were hardly half the size. This system of starting plants in pots, and setting them out in August, properly carried out, will never fail to give entire satisfaction in growing strawberries.

Shelter for the Head.

Many a severe headache, and a restless night after an exhausting day's work in the harvest field, might be prevented by the use of some simple precautions. The sun beats down upon the head and neck with great force, when the thermometer marks 90 degrees and over in the shade, and the scorching effect of a heat of 120 degrees in the direct sunshine, is both uncomfortable and dangerous to the health. The head should be protected in such cases by wearing a straw hat, or one of some open material, with a broad brim, and by placing a leaf of cabbage or lettuce, or a wetted cambric handkerchief in the crown of it. The very sensitive back of the head and neck, is best protected by means of a white handkerchief fastened by one border to the hat-band, and the rest made to hang down loosely over the neck and shoulders. The neck is thus shaded from the sun's rays, and the loosely flapping handkerchief causes a constant current of air to pass around and cool the neck and head. We have found this to be a most comfortable thing to wear, and its value as a protector to the base of the brain and the spinal marrow is so well known in hot countries, that the use of a similar protection is made imperative in armies when on the march.



NECK PROTECTOR.

Ogden Farm Papers.—No. 78.

BY GEORGE E. WARING, JR.

It will be remembered that much that I had affirmed concerning the use of the deep-can system for setting milk, was controverted by several critics, notably by Mr. Eastburn Reeder, and other members of the Solebury Farmers' Club, of Pennsylvania. I had no time and no opportunity to go fully into comparative experiments, nor did I dare to take the risk of changing my system for experiment—fearing to injure the quality of the butter, and so permanently injure my business.

All I could do was to "ride a waiting race," and trust to time to adduce further evidence for or against it. Time seems to have done all that I could ask. Mr. Reeder, who had made frequent careful experiments, demonstrating in every instance a decided advantage in shallow setting, at various temperatures, was the most effectual of the opponents of the system, and when Mr. Hardin made experiments in deep setting at the Chautauqua County Dairy Exhibition, if I remember correctly, Mr. Reeder came again to the charge, and insisted that the effect was not, and could not be, under the circumstances, what its advocates had claimed for it. Now, however, since Mr. Hardin has given so much prominence to his form of the deep-can system, Mr. Reeder, who seems to be imbued with the true spirit of careful investigation, has experimented with it in comparison with shallow setting, and has reached results corresponding exactly with what I had always claimed—that is, in general terms, he found, as we did, that either shallow or deep setting, if properly carried out, will develop

all of the butter that the milk contains—leaving the question of merit to be decided according to the amount of labor required, and the uniformity of the result produced. Essentially, Hardin's system is the same as that which I have advocated, save that I produce a uniform temperature by swimming my cans in cold spring water, and he by shutting them in a refrigerator with ice. Mr. Reeder experimented with two portions of 450 lbs. of milk each. The product was, from the shallow pans, 78 lbs. of cream, and 27 lbs. of butter; from the deep cans, 128 lbs. of cream, and 27 lbs. 2¼ ozs. of butter. The extra amount of cream in the deep setting comes from the lack of evaporation, because of the small exposure of cream, and the low temperature of the surrounding air. The amount of *butter* is practically the same. Mr. Reeder explains the error of his former experiments, by saying that he had skimmed only two inches deep, "obtaining 3¼ lbs. of butter; and increasing the depth of skimming in subsequent trials, to 3, 4, and 5 inches, and obtaining as a result 4, 5, and 6 pounds of butter from 100 lbs. of milk." It had been *our* custom to remove all of the cream until we came to blue milk, without reference to the number of inches taken off. He recommends the Hardin system for general adoption, and I have no question that it has the advantages that are claimed for it. It comes within the reach of a large number of dairymen, who can obtain a sufficient supply of ice, and who are not so situated that they can procure the necessary cold water. Many of those situated as I am, where ice is an expensive luxury, and difficult to obtain in large quantities, will find my method, of pumping cold well-water by wind power, a perfectly good substitute. Indeed, I am still satisfied that the plan for a dairy, which I described with an illustration in the *American Agriculturist* some years ago, where the water is taken from the bottom of a deep cistern, pumped by wind-power into the tank, the overflow going back to be cooled in the cistern, is, in all respects as good as it is simple. Were I to construct a new dairy, where there was any question as to the constancy of my well, I should adopt this deep cistern plan with entire confidence.

The Maine Farmer, in answering an inquiry as to the best method of setting milk, gives a summary of all of the different processes, saying, "Col. Waring has aimed for the top round, and he can claim a fair degree of success, but with all his faculty for advertising his wares, he has too much good sense to claim that his method would be the best for all, or that it is beyond the point of improvement." This is essentially true, save that I have no wares to advertise, (Ogden Farm butter advertises itself), and the method I have adopted is not at all my own. It is the method of all the large creameries that have a good control of spring water, and is merely an adaptation of the Swedish system of setting milk in deep cans in ice water—the very little that I claim concerning it, is that I have been able to demonstrate its success, and that it has been my good fortune to have such a wide-reaching mouth-piece as the *American Agriculturist* in which to make its success known.

It has frequently been suggested that some means should be adopted, by which perfectly authentic tests may be made of the butter producing capacity of the much vaunted Jersey cattle, and that the well known differences existing between individuals of the breed, should be demonstrated—with absolute certainty as to the carefulness of the trial—that intending purchasers may know, not only how good a Jersey cow *may* be, but *how good the individual cow is.* Any plan that would compass these objects, would have in addition to this obvious advantage, the very great one of giving an added value to the question of pedigree. Could we know that such and such families, or such and such individuals, might be depended upon to produce a certain yield of butter—at the flush, and throughout the year—pedigrees tracing to these, would be a very good indication of value; and could the system be carried on until a certain pedigree should be confined entirely to animals of the largest production, the value that would be added to the animals having this family tree, would, of course, be very great. Still further, were such trials to inspire universal confidence, we should attain the far most important object of checking the production of inferior animals, and forcing the selection into the range of the very best—a course that would result in the greatest possible improvement of the stock of the dairy animals of the whole country.

The American Jersey Cattle Club has established a system for recording pedigrees and for disseminating information which accomplishes all that seems to be within the scope of its official action, but a project is now on foot among some of the individual members of the club to establish a breeding and cow-testing farm, where carefully conducted trials may be made and recorded. Should this project be carried out, the character of the gentlemen interested in it will be a sufficient guaranty of absolute honesty and thoroughness, and honesty and thoroughness are the two chief essentials in the conducting of all such trials. It would be the purpose of this association not only to breed on its own account a class of animals whose excellence should be based on absolute performance at the pail and churn, but to furnish facilities for private breeders in all parts of the country, who might choose to send their best cows to take their degree at its examinations. Something of this sort would be valuable under any circumstances, and it is especially necessary in view of the fact that Jersey breeders are very largely wealthy men who have a passionate fondness for, and implicit confidence in, their own herds; and who honestly believe—at least a dozen of them whom I know—that they have the very best butter producers that have ever been bred. These gentlemen are very much influenced in forming their opinions by the statements of their herdsmen, and herdsmen, as we all know, are not always reliable. Some of these consider it a slight crime to tell their employers little "whoppers," which can have no other practical effect than that of making their employers happy. Then, too, the disposition of mankind to encourage its own pleasant deception is very great. What we want, and what, I hope we are to have, is a strictly conscientious and impartial test by weight and measure of every drop of milk drawn, of all the cream raised, and of all the butter made, each cow's product being kept by itself, and a systematic record kept year after year. Some of the practical questions that would be incidentally decided by such a system are these: 1. Will a cow produce more butter within the year if she comes in in the fall than if in the spring? 2. Will a cow produce most, year after year, if fed only on grass and hay, or if fed largely with grain? 3. Is that cow the most profitable which gives the largest flow of milk, or does the extra richness of the moderate flow more than compensate for the loss of quantity, butter being the object? 4. Does the great milker, or the steady milker, produce the most milk during the whole year? 5. Does the *quantity* of cream or its *richness* have the greatest influence on the total product of butter?

A continued interest is evinced by the tone of the agricultural press in the question as to the intention of the Jersey Cattle Club to modify its rules. For the present it can only be said that a very sweeping change was proposed at the last annual meeting, and has been voted down by a large majority. At the same time the discussion of the question has shown a decided disposition to make some modifications concerning the evidence required of the purity and quality of animals imported from the Island of Jersey, and it is not unlikely that some such change will be made. On the other hand, it may be considered as tolerably settled that the club will not consent to any material relaxing of the requirements in the case of animals bred in this country. Among the older members of the club there is hardly one who has not made a serious pecuniary sacrifice in order to secure a rigid exclusion of questionable pedigree, and so far as I know, none of them are disposed now to offer to the general public any more favorable terms than those which they have themselves willingly accepted for the sake of the general good. (While on this subject, I desire to say to such of my readers as have seen the discussion I was rash enough to undertake with the *Live Stock Journal*, that I have withdrawn from that discussion, because I think I have fully answered all that its editor has said concerning the club, and because it became obvious that he—being in power—meant to have the last word at any rate).

Referring to the suggestion made in the last number of these papers, I have to say that a careful examination of the agricultural exhibit at Philadelphia, makes it seem almost impossible to give any account of it which would not be absurdly inadequate. On the one hand I found no single thing that seemed to promise a striking revolution in the processes of American farming; but on the other hand, there is a wealth of display in every department of machinery, products, fertilizers, and processes, which cannot fail to impress the farmer with the magnitude and importance of his industry. At the State Fairs, with which we are all familiar, there is always a great and interesting exhibition in all of these directions, but the Centennial has gathered together the advantages of all these State Fairs, and has added to them a good exhibit of the agriculture of almost the whole world.

It is not, after all, purely as an agricultural show that the International Exhibition appeals to the American farmer, but as a wonderful illustration of what it implies to be an inhabitant of this insignificant planet. A week spent by a farmer and his family in wandering thoughtfully through the enormous aggregation of the products of art and industry and nature, exhibited at Philadelphia, would result in a nearer approach to a liberal education than they are likely under their circumstances ever again to acquire. I have passed some time in the more important museums of Europe without finding in them all anything like the display of interesting and instructive objects that is now offered to the American people.

Science Applied to Farming.—XX.

BY PROF. W. O. ATWATER.

Economy in Manuring.

In several of the previous articles we have been trying to get at some of the more important principles upon which the right use of fertilizers is based. The letters that come from many directions, the questions asked by farmers who visit our laboratory, and whom I meet elsewhere, all show how deep and wide-spread is the interest in these subjects among intelligent and thoughtful cultivators of the soil. Let me, then, offer a few more suggestions, and ask those who read them to ponder the subject well, while they are watching the growth and harvesting this season's crops.

In saying that no plant can grow and flourish without an available supply in the soil, of each of a certain list of substances needful for its food, and that the chief use of fertilizers is to supply food which plants need and soils fail to furnish, we are simply repeating now universally admitted facts. It is perfectly plain, then, that those fertilizers will be most economical, which, in one way or another, supply these lacking materials in the needed proportions, in the best forms, and at the lowest cost. We have, then, two very important problems to solve: *First*, what ingredients of plant-food do our soils lack? *Second*, by what applications of fertilizers, or other means, will this need be best supplied? To answer either of these questions fully and definitely, is very difficult; the first, because of the difference in soils; the second, because we do not know, and do find it slow work to discover definitely, the ways in which atmosphere and soils and fertilizers, supply food, and plants use it.

Table 31, in the June No., showed what materials are removed from the soil by different crops. The list included, besides water, the chemical ingredients, Nitrogen, Potash, Soda, Lime, Magnesia, Phosphoric Acid, Sulphuric Acid, and Silica. Very small quantities of Iron and Chlorine might have been included also. The amounts and proportions vary with different crops, but the list is the same for all. Every crop takes more or less of each of these materials from the soil, but are they all necessary?

As was explained and illustrated by some experiments in our *March* article, Nitrogen, Potash, Lime, Magnesia, Iron, Phosphoric Acid, and Sulphuric Acid must be furnished to crops through their roots, by the soil, in order to their growth. Each one of these is an *essential ingredient* of plant-food. If the available supply of any one be deficient, the crop cannot flourish. In how far the three other substances mentioned are essential to the support of plants is not so definitely proven. The best experimental evidence at our disposal indicates that but a very minute quantity of soda, if any, is needed by our ordinary plants, but that in some cases, at least, small amounts of chlorine are indispensable, and minute quantities of silica may be necessary to the healthy and normal perfection of the plant. In many trials made at the Experiment Stations, and elsewhere, in which oats, buckwheat, corn, and various other plants have been grown with their roots in water or in artificial soils, the plants have been raised stronger, healthier, and in every way more perfect than is ever the case, except in the rarest instances, in ordinary field practice. These results have been obtained when neither soda nor silica was supplied except the very minute portions that were contained in the original seed, or dissolved by the water from the glass of the jars in which the plants were raised. But when the supply of nitrogen, or potash, or phosphoric acid, or lime, or magnesia, or iron, was deficient, the crop failed; and, in some cases, without chlorine, they were sickly. Such are the results of a vast deal of the most careful experimenting.

What Ingredients of Plant-food are apt to be deficient in our soils?

It is sufficiently well settled, that Nitrogen, Phosphoric Acid, Potash, Sulphuric Acid, Lime, and Magnesia, are the only ingredients of plant-food which need to be supplied in fertilizers. Iron, Silica, and Chlorine, are furnished in abundance by every ordinary soil.

Generally speaking, we may accept the opinion commonly held that Magnesia may sometimes be lacking, that Sulphuric Acid and Lime are more apt to be deficient in our ordinary soils, and Nitrogen, Phosphoric Acid, and Potash, most so. In one soil one, in another, several or all of these may be wanting. Such is the general result of all the best evidence of experience and experiment which we have at our disposal.

It was once thought that the chemical analysis of a soil would easily reveal the deficiencies in plant food. But later experience has shown this is, at best, a costly and defective source of information. Different samples of soil from the same field may vary widely in composition, and, what is a still greater difficulty, the chemical tests which make known the presence of a given ingredient in the soil, do not show whether it is in such a form that the plant can use it. And there are many processes of vital importance to the sustenance of the plant which are continually going on in the soil, but which the analysis does not reveal.

In fact, in the present very defective condition of our knowledge of these subjects, the surest and best way to learn what are the needs of a given soil is by actual experiments with different fertilizers and crops, and modes of treatment.

Complete vs. Special Manures.

A friend once asked me to recommend to him a phosphate for a top dressing for his lawn. I had just analyzed a sample from a neighboring dealer, and found it very good, and told my friend so. He bought a quantity, tried it, and saw scarcely any benefit from it. The season was dry, however, and we were inclined to think that might have been the reason for the failure. Not long since a very intelligent farmer was telling about some experiments he made a few seasons ago with artificial fertilizers. He had tried small lots of a number of different brands of superphosphates and Peruvian guano also. So far as he could judge, there was but little difference in the results, nor did either of the articles prove especially beneficial. He felt certain that the fertilizers were in themselves good, and was wondering why the results were not more satisfactory. The failure could not be ascribed to drouth, for the season was not particularly dry. I am inclined to think that in this case, and perhaps in the other one, the fertilizers did not supply what the soil lacked. And right here, I believe, is to be found the cause of a good many of the failures in the use of artificial fertilizers. Most of our artificial manures are only special fertilizers. They supply part, but not all, of the list of ingredients of plant food, which may be deficient in our soils. During the past winter and spring, we have analyzed, at our Experiment Station, about a hundred samples of commercial fertilizers, such as are sold and used in Connecticut. With the exception of a small number of samples of potash salts, but very few of them furnish any considerable quantities of potash, though nearly all contain a good deal of phosphoric acid and lime, and the most of them nitrogen also. In a Report lately issued by the Station, analyses of some seventy samples are given. This list includes Phosphates, which furnish phosphoric acid and lime; Superphosphates, which contain phosphoric acid, lime, and sulphuric acid; Bone manures and "Ammoniated phosphates," which contain the ingredients mentioned, and small quantities of nitrogen in addition; Peruvian guano and fish manures, which contain a good deal of nitrogen, and more or less phosphoric acid and lime, and so on. None furnished any notable per centages of either potash or magnesia, except the Peruvian guano, which yielded small proportions of potash, the highest being about 2½ per cent, and of four Nitrogenous superphosphates, to which German Potash salts had been added in manufacturing. Two gave about four per cent of potash, the others less than two per cent of potash each. Along with the potash they contained magnesia also. Of the whole list of seventy commercial fertilizers, referred to in the Experiment Station Report, only the two last mentioned furnished notable quantities of each of the whole list of ingredients of plant-food which are apt to be lacking in our soils. These last were complete fertilizers. The others were special fertilizers.

In the last article mention was made of some experiments by Messrs. Lawes and Gilbert in England, and of Prof. Storer at Jamaica Plain, Mass. The soil on which Messrs. Lawes and Gilbert worked, gave continuously good results with manures which furnished nitrogen and phosphoric acid, and was able to supply sufficient potash of itself. But on Prof. Storer's soil, phosphates and nitrogenous fertilizers did but little good, while those that furnished potash proved most effective. —In Lawes and Gilbert's experiments, the soil supplied enough of the other essential ingredients of plant-food, so that with the addition of nitrogen and phosphoric acid, as large crops were obtained year after year, as with heavy dressings of barn-yard manure. Prof. Storer's land furnished enough of phosphoric acid and lime, and the other essential ingredients of plant-food, so that when potash was added, as large crops were obtained as with barn-yard and stable manure.

The need of potash in many New England soils is likewise indicated by the experiments of Profs. Goessmann and Stockbridge of the Massachusetts Agricultural College, the Messrs. Sturtevant in Framingham, Mass., and others. And these results are confirmed by a great deal of practical experience in the regions where these experiments have been made and elsewhere.

We have some experiments now going on in connection with our Station in which the effects of different fertilizers on a soil in this neighborhood are being tested. Of course no definite results are obtained as yet, as the crops are still young, but, so far as we can now judge, the fertilizers which contain potash are doing considerably better than those which have no potash.

In some of his field experiments, Prof. Storer obtained smaller crops of beans and barley on plots treated with bone and other phosphates, than on contiguous plots which received no manure at all. In some cases the phosphates, instead of increasing the crops, actually diminished them. The same observation has been made by experimenters in Europe. This injurious action of phosphates Prof. Storer is inclined to think would occur only on poor soils. To investigate the cause, he "tried a number of experiments in pots, with the view of determining how large an amount of phosphatic manure may be safely applied to sterile land. From the results obtained he infers that bone-dust and other phosphates, when present in too large a quantity, may exert an exceedingly hurtful influence on the plumule, or first sprout, that springs from the seed, especially at the time when the young shoot is ceasing to draw its nourishment from the seed, and is beginning to live on matters derived from the soil and air."

Now do not these facts give a very probable explanation of the reason why my friend's superphosphates and guano did so poorly? They are special fertilizers. They supply part but not all of the indispensable ingredients of plant-food. Did they fail to supply just the ones that were most needed?

Now let us look at this matter from a slightly different standpoint. Many farmers find that Peruvian guano, fish, and other special fertilizers, whose action is quick and stimulating, seem to leave their soil in a more exhausted condition than before they were applied. A good many of our Connecticut farmers complain that guano and fish "run their land down, drive out the grasses, and bring in sorrel." The same observation is made concerning bone manures and other phosphates. One of the most observing farmers in this region remarked to me a while ago, that bone does not work as well on his and his neighbors' land, as when they first began to use it.

In the Experiment Station circular above referred to is the following:

"May we not at least question whether the immediate effect of these special fertilizers has not been, in many cases, to aid the plant to use the more available stores of food in the soil, until these latter have become so far exhausted as no longer to respond to the stimulating action of the special manures?—If the above supposition be correct, it is clear that what such exhausted soils need, is something to supply, not only the nitrogen and phosphoric acid of the guano, or fish, or bone, or superphosphates, or other special fertilizers, but also the potash and other materials that these latter do not furnish.—Ashes are, for many soils, a standard fertilizer. Places where a tree or a brush-heap has been burned, often show the effects of the manuring for years. It is an old saying, that 'The land never forgets ashes.' Ashes supply directly all the soil ingredients of plant-food except nitrogen. Their indirect action is also, very likely, not unimportant in rendering other materials in the soil available. Instead of wearing out soils, they strengthen them. May not this difference be due, in part at least, to the fact that they furnish the other ingredients of plant-food which the guano and fish lack?—Stable manure furnishes all the ingredients of plant-food. It is a complete fertilizer. Farmers do not complain that it helps to exhaust their land."

In brief, these special fertilizers are useful in proportion as they supply the materials which the crops need and the soils lack in the special cases where they are used. Otherwise they cannot be profitable. And, as I have repeatedly urged, the question whether a guano, or phosphate, or bone manure, will be profitable on a given soil is best settled by experience and experiment.

Wesleyan University, Middletown, Conn.

A New Wagon Brake.

An automatic wagon brake that will act of itself, when needed, without the help of the driver, is a very desirable thing. In drawing heavy loads upon hilly roads, such a brake may prevent serious disaster, or loss of life. A brake of this kind is illustrated on the next page, where figure 1 shows the whole arrangement. The iron rods, *A*, *A*, fastened to the end of the tongue braces, are connected by screws and nuts, *C*, *C*, to cross levers, *B*, *B*, upon which the slotted shoes, shown at figure 2, are hung. The

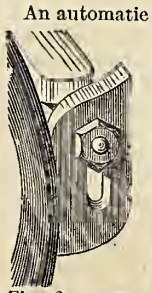


Fig. 2.—SLOTTED SHOES.

bolt, which holds the tongue-braces to the hounds, works in a lengthened slot, instead of a simple round hole. When the wagon is drawn forward, the cross levers release the shoes from the wheels,

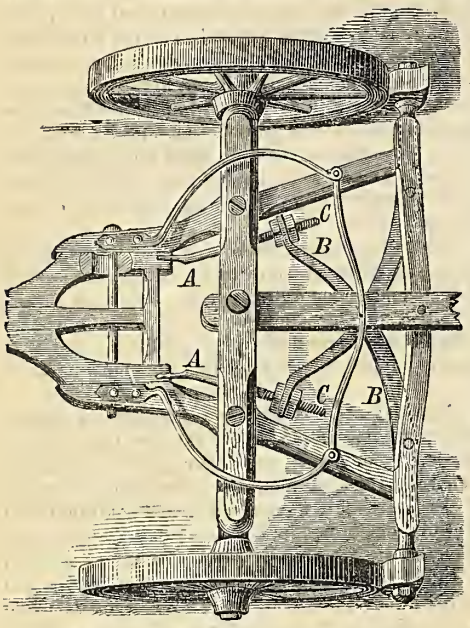


Fig. 1.—VIEW OF MARKRUD'S BRAKE.

but when the wagon presses forward, the tongue is forced back, and by the action of the cross levers holds the shoe against the tire. The friction turns the shoe so that the curved end locks against the wheel. When the back-pressure of the tongue is released, the shoe falls into its former position again of its own motion. The inventor of this useful brake is H. Markrud, of Ettrick, Wis.

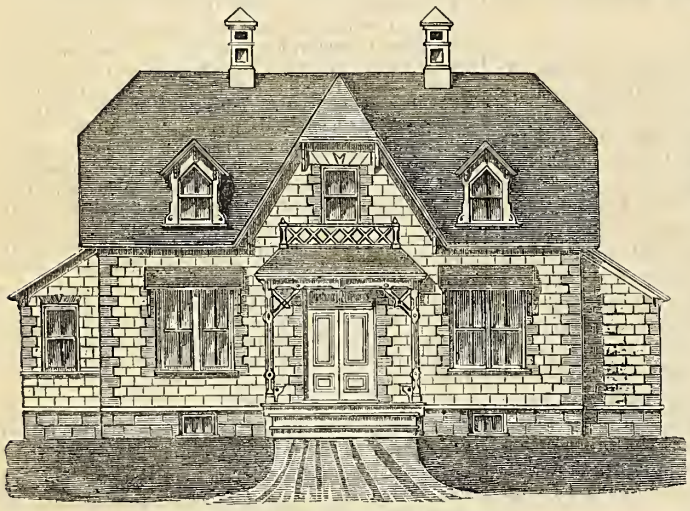


Fig. 1.—FRONT VIEW OF HOUSE.

A Stone House Costing $2,500.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan has many features to commend it as an economical country house. It is similar in many respects to the one given last month, having an equal breadth of front, and is constructed of like substantial materials. The arrangement of the several parts, however, are more regular and compact, and embrace accommodations for a good sized family.... **Exterior,** (fig. 1.)—At first sight the reader will perceive the perfect balance apparent in the outlines and details of the front. Variety is also an especial feature, resulting from the pleasing diversity and systematic distribution of the prominent parts. The site has much effect upon the appearance of any building. This house should have a commanding position to afford such views as would seem to be expected from its broad and generous windows. Health and happiness being largely dependent on the situation—it is important to select a position having a natural drainage, and therefore more likely to be surrounded with pure wholesome air.... **Cellar,** (fig. 2.)—Hight 6½ feet. The plain engraving saves the need of further explanation. The ceiling is smoothly "laid off" with one coat of plaster, and the walls are flush pointed, so that the whole interior may be whitewashed whenever it shall be desirable to lighten or sweeten the cellar.... **First Story,** (fig. 3.)—As is suggested by the exterior, system and order are prominent features in the interior arrangement. The main Entrance is through double doors. The principal Hall is central and roomy, and contains the open and ballustered stairway to the second story. The two principal rooms are of equal size, with outlooks front and rear. The Parlor has a pleasant bay or plant window, arranged to be shut off, when desirable, by large sash doors.—This window has no floor, but is cemented around its sides below the floor-line, to secure dryness to the walls, and is filled with earth wherein plants may be grown. The thick solid masonry surrounding this bed will secure it from frost. The temperature required to make the parlor comfortable will be sufficient for the plants—while the strong sun-light will insure their vigorous growth. A mirror may be placed on the mantel opposite this window, arranged to reflect its contents, and make a most cheerful picture.—The Living-room is a convenient apartment, in easy communication with the front and rear entrances, the wood-house, and the cellar-stairs, passing down under the front hall stairs. It has a large pantry, and is provided with a range, sink, stationary wash-tubs, water, and waste-pipes. The importance of having cold and hot water always ready should not be overlooked. Very much of the drudgery of housework in the country, consists in drawing and carrying water, and besides, it generally happens that when water is most wanted, the vessels are empty, necessitating great inconvenience and frequent distress.—The Bed-room is situated between the parlor and living-room, and communicates with both, and has a good sized closet. This apartment may be used as a sewing-room, where such work need not be put away every time it is laid down for a moment. The Wood-house at the rear is constructed of light materials, and serves as a fuel and utensil room.... **Second Story,** (fig. 4.)—This story is divided into five chambers, a hall, and seven closets. Each room is entered directly from the hall, obviating the too frequent necessity of passing through one room to reach another. Closets are a necessity in any well ordered household; their uses are so numerous that it is hardly possible to provide too many.... **Remarks on Construction.**—The element of durability is an important quality of this structure, avoiding the necessity and expense of frequent repairs. The exterior walls are

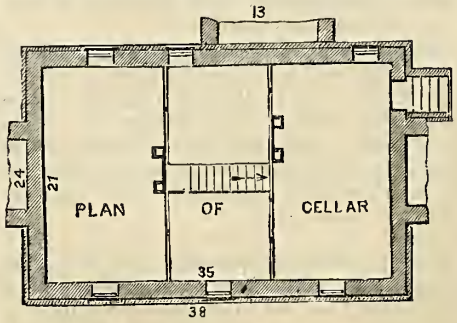


Fig. 2.—PLAN OF CELLAR.

constructed of stone and brick as described in the last *American Agriculturist.* Care should be taken to make these walls perfectly solid and thorough. The mortar used should be of the best lime, and coarse sharp sand. Such mortar improves with age, but produces greater hardness and strength.

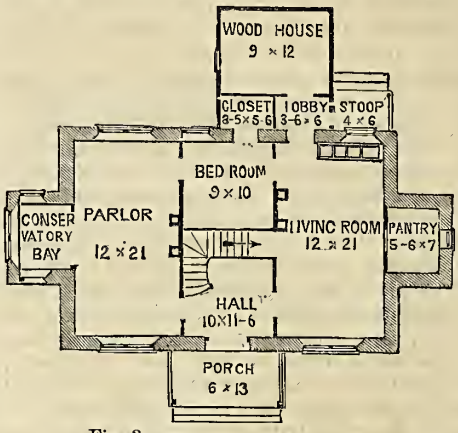


Fig. 3.—PLAN OF FIRST FLOOR.

The brick corner work may be laid in dark or blue mortar with good effect in subduing the strong contrasts in color. Interior plastering should never be applied directly to the stone-work. Such walls do not readily conform to the sudden changes of the surrounding temperature, and are rendered damp and unwholesome from the moisture of the air being condensed upon them. They should be furred off, leaving an air-space between the stone-work and plastering, through the whole hight of the wall, and opening into the spaces between the rafters of the roof. Side walls constructed in this manner afford a most comfortable interior, having a more equal temperature than is possible in the usual frame building, and neither the severe cold of winter nor the extreme heat of summer is immediately felt within. The chimneys are of hard brick; their interior location insures a great saving of fuel, as the heat that is radiated from them greatly assists in warming the house. The principal roofs are covered with dark slate. "Keystone" and "Chapman" are good qualities and are mostly used in this vicinity; they have good color and do not fade. A good effect is produced by clipping the exposed corners of about one-third of the slate in a uniform manner, and laying them in belts of five or six courses each across the roof:

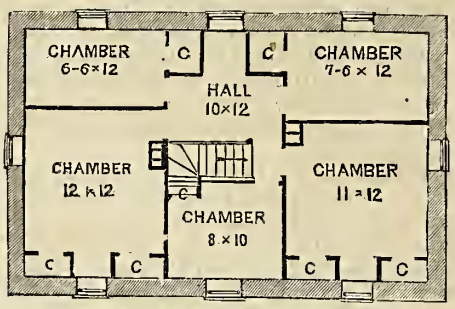


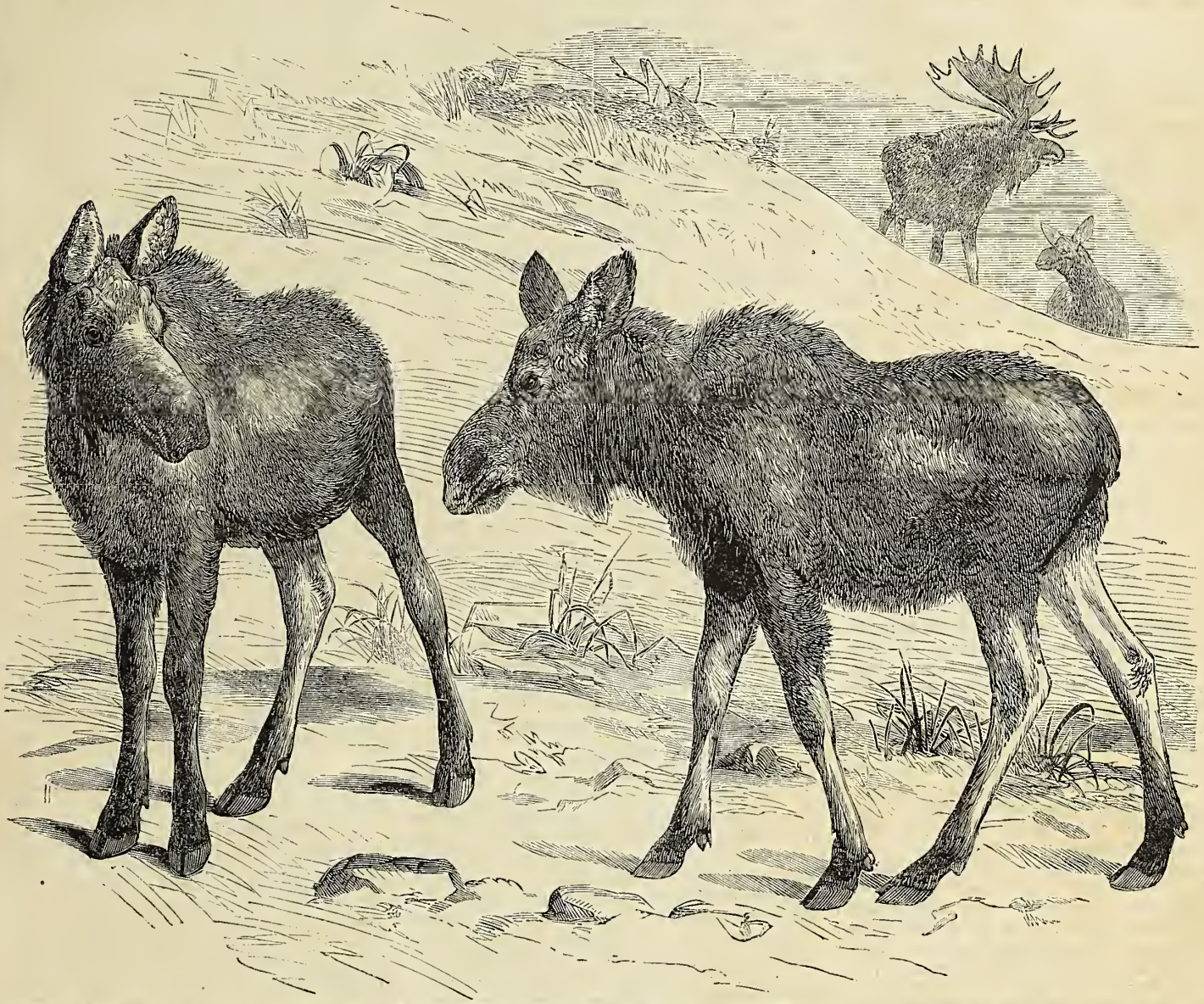
Fig. 4.—PLAN OF SECOND FLOOR.

Estimate of the Cost:

111 yards Excavation, @ 20c. per yard	$ 22.20
171 perches Stone Work, @ $2.75 ℔ perch	470.25
103 feet Stone Sills and Steps, @ 30. per foot	30.90
2,000 Bricks in angles, etc., @ $12 ℔ 1,000, laid	24.00
4,000 Bricks in chimneys @ $12 ℔ 1000, laid	48.00
660 yards Plastering, @ 35c. per yard	231.00
80 yards Plastering in ceiling of cellar, @20c. ℔ yard	16.40
3,367 feet Timber, @ 2c. per ft.	67.34
viz. 2 Girders, 4x8 in. x 32 ft. long. 41 Beams, 3x8 in. x 13 ft. l'g.	
4 Plates, 4x8 in. x 11 ft. long. 22 Beams, 3x8in. x 11 ft. l'g	
2 Purlins, 4x8 in. x 38ft. long. 40 Rafters, 2x5 in. x 19 ft. lg.	
1 Ridge, 2x6 in. x 29 ft. long. 4 Valleys, 3x7in. x 21 ft. l'g.	
1 Ridge, 2x6 in. x 22 ft. long. 18 Collars, 1½x5 in. 14ft. l'g	
230 Wall Strips, @ 13c. each	29.90
130 Furring Strips, @ 6c. each	7.80
Anchors (of tire iron) $3; Cornice materials, $30	33.00
300 Shingling Lath, @ 6c. each	18.00
Rear Wing, (exclusive of tin) complete	100.00
20 squares of Slate, @ $9 ℔ square	180.00
32 Hemlock Boards, @ 16c. each	5.12
3½ squares of Tin, @ $8 ℔ square	28.00
60 feet of leaders and gutters, @ 10c. ℔ foot	6.00
213 Flooring, 8 inch, @ 25c. each	53.25
Stairs, complete	70.00
Piazza and Stoop, (exclusive of tin) complete	80.00
6 Cellar Windows, complete, @ $5 each	30.00
17 plain Windows, complete, @ $10 each	170.00
4 Dormer Windows, complete, @ $18 each	72.00
27 Doors, complete, @ $9 each	243.00
4 Mantels, 2 marble and 2 wooden, complete	62.00
Closet finish, complete	18.00
Range and Plumbing, complete	150.00
Nails, $14; Painting, $60; Cartage, $15	89.00
Carpenter's labor not included above	125.00
Incidentals	19.84
Total Cost, complete	$2,500.00

A Pair of Young Moose.

There is considerable confusion among the common names given to the larger members of the deer family. Our Moose, (a name derived from the Indians), is so near the European Elk, that some naturalists have considered the two as the same animal, differing only in such points as may be due to food and climate, but naturalists at present regard them as distinct. Then the animal that is called the Elk in this country, or the Wapiti, is quite different from the European Elk, but belongs to the same genus with the common deer. It has been proposed to call our Moose the American Elk, and to give the animal generally known as Elk, the name of American Stag, but it is impossible to change common names, after they have become well established, and the animal in question, however naturalists may class it, will continue to be a Moose and not an Elk, so long as it exists. Our readers are no doubt familiar with the appearance of the full-grown Moose, at least from engravings, and not a few of those living on our northern borders have seen the animal itself in a wild state. Like other members of the deer family, it is annually growing more scarce, and its range, so far as our territory is concerned, becomes more and more narrowed to a strip along the northern part of the New England States—and westward to Oregon. Their southern limit is about 40° 30', and they are found northward to the frozen regions. The Moose exceels all living animals of the deer family in size and strength; it is as large as an ordinary horse, and weighs from 800 to 1,200 lbs. The animal is remarkable for the size and shape of its horns; when four years old, the horns become palmated, i. e., with a broad, flat expansion, like the palm of the hand, to which are attached points corresponding to fingers. The full grown horns measure six feet across, with a palm a foot wide, to which are attached points or prongs up to the number of 20 or more, the whole weighing from 50 to 70 lbs.—an immense mass of bony matter to be secreted and shed every year, and in marked contrast with the size of those of an animal one year old, in which they are but an inch in length. The Moose is a formidable animal at the breeding season; the males fight among themselves, and the hunter is at this season very apt to become the hunted, and obliged to flee for his life. Though hunted at other times, the Moose is most successfully shot in winter, as the small feet of the animal break through the snow and it moves slowly, while the hunter upon snow shoes can readily outstrip it. The disproportionately large head of the animal, with its long, enlarged upper lip, give it an appearance which caused Audubon to remark: "The head forcibly reminds us of that of an enormous jackass." This asinine appearance is still more striking in the young animals, as may be seen in the portraits of a pair added this year to the London Zoological Gardens, and here reproduced from "The Field." There can hardly be any animal so ungainly, or more like a slouching young donkey than a young moose. The flesh of the old moose is coarse and dry, but the young animals are sought after by hunters on account of the superior quality of their flesh; the mouffle, as the nose is called, is regarded as a great delicacy, as is also the tongue.



PORTRAITS OF A PAIR OF YOUNG MOOSE AT THE ROYAL ZOOLOGICAL GARDENS.—*Drawn and Engraved for the American Agriculturist.*

Among the Farmers.—No. 7.

BY ONE OF THEM.

Business called me into Westchester County, N. Y., a few days ago, and I visited a farm whereon a racing stud has been kept for many years. It lies very near to the East River, just where it joins Long Island Sound. The soil is good alluvial, lying upon a granitic basis, neither light nor heavy, but a friable, easily tilled loam, packing somewhat if worked in wet weather. I was struck with the excellence of the

Pastures,

and was pleased with the common-sense views of the proprietor concerning them. It would be hard to induce him to plow up an old pasture, though the ground is level and well drained, and would make capital corn or hay ground. "A good pasture," said he, "once well established, is worth everything to a breeder, especially of horses, and must never be touched, except to take out weeds and to top-dress."—He is quite right, like a permanent meadow, or New England "mowing lot," an old pasture, if the feed be abundant and of good quality, is invaluable. Having been years in growing to a state approaching perfection, if disturbed, it might be equally long in being restored. They have a proverb in England, which I have before quoted, for it contains a rare kernel of truth under a heap of exaggeration. It is this—"It takes three generations to make a gentleman, but three hundred years to make a lawn." There are, to be sure, a few lawns in England whereon the sward may be supposed to be three hundred years old, but it

would be hard to prove that the surface had not been plowed within that period. It is indeed much easier to establish a lawn or permanent meadow land in England than here, for grass is the natural product of the land much more than with us, for there the climate is moist and grass grows the year round, much as it does with us in May. If it be true there that a well established natural sward is difficult to replace or renew after it is once disturbed, it is ten times true here, where our hot summers burn the grass, the frosts of winter heave it, and our tremendous rains wash it out. The grass of these Westchester Co. pastures was unusually free from weeds. I observed June Grass, Door-yard Grass (*Poa annua*), Flat-stalked Meadow Grass, Red-top, Sweet Vernal Grass, and White Clover, in abundance. In order not to introduce the seeds of weeds, the pastures are never dressed with stable or yard manure, but artificial fertilizers are used exclusively.

It is a matter of vital importance that the young horses should have the constituents of bone in their food, otherwise they will lack vigor and strength of limb. That the grass may not be wanting in these essential ingredients, these pastures are frequently, if not always annually, dressed with ashes, bone-dust, or superphosphate of lime, alternately. This separate application is found to be better than to put them on mixed.

Breeding Stables.

The arrangement of the breeding stables and paddocks is made with exclusive reference to the health of the mares, and the full, free, natural development of the foals. Those things which we farmers are likely to keep constantly in mind, as the saving of labor, preserving of the manure, etc., seem to be absolutely ignored in solicitude for the perfection of the health and growth of the young horses. There are groups of moderate, but various sized pasture lots, and at the angle where the corners of four of these paddocks meet the stables are placed, each stable or little barn, being in the form of a T, and in each division of the T a stable, having doors and windows opening to the south, and windows to the east and west, so that the sun may freely enter. The doors open into paddocks, so that the mares and foals may freely pass and repass. There is storage room for several tons of hay and straw in the loft, and a store-room for grain on the north side. The fine old thoroughbred mares looked as if they were enjoying their old age. Dowager queens, no longer reigning favorites, or favored and petted debutantes, but in the midst of their greatest usefulness.

My friends mourned but over one thing, and that is, that the colts had not great pastures of several hundred acres each to run over, as their dams, some of them, enjoyed in Maryland and Virginia. A yearling can stretch his legs pretty well in a ten or twenty acre lot, according to my notion, and certainly they will do it if there be four or five together. The stables are abundantly lighted, the windows being numerous, large and high, so that they are very warm and comfortable in winter. I should have said that there are two stables in what represents the upright portion of the T, and usually one in each wing, with the store-room in the rear between them. The foaling stables are at the main barn, near the house. They are not peculiar except that they are peculiarly good. The mangers, water-troughs, and hay racks are elevated rather high, having the entire floor free. As soon as the foal is strong enough, and begins to feel a little independent, he is placed with his dam in one of the outside stables, where they pretty much take care of themselves.

The system upon which these thoroughbreds are reared, appears to be to give them all the liberty they can have, and to have all arrangements as nearly like nature as possible. The breeding mares are rarely worked in any way, many of them never either saddled or harnessed now-a-days. For the full, symmetrical, and vigorous development of the young animals, a profusion of the very best food is essential, and there seems to be no stinting of oats. It is wonderful how well this grain is adapted to horses. There is no substitute for it. Other grains can hardly be fed alone, certainly not in any such quantities as we feed oats. The hulls are by no means unimportant in aiding digestion, and really give the grain its peculiar value.

When horses are bred for speed chiefly, some such arrangements as I have described seem advisable, but in breeding agricultural horses, they could not be carried out with profit.

Breeding Draft Horses.

Regular labor, never excessive, nor interfering with systematic feeding, gives health and vigor to the mares, so that they may have a foal every year, and the farmer lose only a few weeks work. The foals, if well fed, and moderately pushed by feeding crushed or ground oats, with perhaps a little corn-meal, or oats and corn ground together, the oats being largely in excess of the corn, will make rapid growth, and be available for light labor at two to two-and-a-half years old. This is particularly true of French horses. At this early age many are sold, particularly colts, and worked for a year or two chiefly upon "truck" farms, and beet-sugar farms, or where there is a great deal of light work, and where few or no horses are bred. Meanwhile, being fed very well and gently handled, chiefly by women, they develop enormous frames and excellent dispositions, and as soon as they become too heavy for the work needed of them, and at the same time marketable, they are turned off at a large advance above their cost, and, having paid their way by their labor, they are thus the source of a handsome profit at a period of life when other classes of horses are only a care and expense.

I have had my doubts whether a similar course of treatment would answer well for half-bred Normans and Percherons in this country, but within a few days any doubts I may have had, have been set at rest by examining a lot of half-bred Percherons, belonging to Mr. W. S. Taylor, of Burlington, N. J., among them a noble two-year-old, of which Mr. Taylor said, he was better able to do heavy labor than his dam—a medium sized mare, which very likely was a stylish carriage horse in her palmy days.

It seems as if this fact, that draught horses are of no expense to their breeders after they are two years old, if they may not be profitably sold at that age, settles almost the question, "which is the most profitable class of horses to raise?"

Trotting Horses.

In going about among the breeders of trotting horses, I find a universal feeling that the business has been overdone, and yet it is passing strange that so little has been accomplished. We cannot breed a trotter—or a "stepper" as the phrase is—to a certainty, or hardly to a probability. Certain crosses, such as American Star or Eclipse mares, with Hambletonian horses, are almost sure to turn out well, but there is no certainty that the progeny will ever trot the mile even in 3 minutes, which, to be sure, is fast enough for any reasonable use. Yet I mention extreme cases. If such crosses can not be depended upon for anything but to produce a reasonably speedy progeny, what shall be said for the flood of trotting blood of less and less repute, which surrounds us, and gives in most cases for several years after the foaling of a colt, a fictitious value to him? The fact that a sire or dam, or some near-a-kin, nag has trotted "low down in the twenties," gives rise to great expectations. These are encouraged by trainers and others, especially the former, who have simply practical knowledge of how "to get the speed out of a horse if it is in him," and who, of course, have an eye to business, and would like the animal in question at their stables for six months to train. A good trainer's services are exceedingly well paid, and while I would not say that they are not a reputable and useful class of men, yet no one will dispute the fact that immense sums of money are thrown away, through them, upon horses of only average merit.

Where do the Fast Trotters Come From?

Are they *bred*, or do they come by chance? So far as I know they are very seldom bred with any definite view to especial speed. No doubt our breeders are improving, and we are doing something in a loose way towards establishing a breed of fast trotters, but it is far from established. We have bred *for* trotters a good many years now, and yet how far are we from having a breed like

The Orloffs of Russia.

A recent traveler describes them as driven in shafts, often between two running mates, at the top of their speed, for miles, and rarely or never breaking their square quick-trot. Thoroughbred horses, English hunters or Arabians, are used for their mates, and we can judge very well that there must be a speed obtained which would be judged respectable even on our fashionable trotting courses. This breed is the result of the discreet breeding of a single man, Count Orloff. It has the reputation of being composed of a large supply of the best Oriental (chiefly Arabian) blood, mingled with that of some English, and more of the best trotting stock of Europe, (Russia, Germany, and Denmark).

It seems probable that we shall not see American trotters established as a uniform breed, until some one, or some company of breeders, systematically *diffuse* (not cross) thoroughbred blood of some sort, either English or Arabian, through that of a well selected group of mares of our most famous trotting families. It is a work of years, and fixed results would hardly be expected before the third or fourth generation.

I have been led without thinking into this discursion of the subject of breeding trotters, when I intended merely to contrast the breeding of draft-horses with that of trotters, and to impress the fact that the trotting horse is generally a heavy bill of expense to his breeder, and a disappointment when sold, while first-class draft and express horses, and stylish carriage horses may be bred with a certainty of reward, which is always the highest satisfaction to the breeder.

Orloff Carriage Horses.

I may here mention an interesting fact which came recently under my observation while abroad, and that is, that the Russians are using the established breed of Count Orloff to develop sub-races or branches of the breed. Among these is the Orloff carriage horse. These which I saw were superb 15¾-hand stallions, coal black, light limbed, up-headed, level, and powerfully muscled, with high, stylish action, and reputed to be very honest trotters. What a boon it would be to this country to have such a breed.

The Apple Crop.

Throughout a large portion of the Eastern States the apple is regarded as one of the most uncertain crops. Some years we have next to none, others give us an abundance. Now and then comes a year of full bloom, and when fairly set, a cold rain checks the development and a "thinning" of the fruit takes place which leaves very few to take the brunt of insect attacks, and for ripening. This is a casualty which may be guarded against in two or three ways, and thus we may essentially improve our prospects for fruit. Squire A., whose farm is much like mine, gravelly, light, with a western slope, and well watered, is famous for his apples, we can get them there when others have none. He uses lime—gas lime—spread in winter and applied irregularly, perhaps once in three or four years. Col. M. may be called a green farmer, he has a small orchard of winter apples, chiefly Rhode Island Greenings and Newtown Pippins. The land was used for a strawberry "patch" before he bought it, and though the trees shaded the ground a good deal, still the strawberries, ripening as they did in the shade, were a little late, beautifully scarlet, and firm, so sold well, and on the whole, though the beds were really run out, paid pretty well. He, almost sacriligiously, plowed up the old gravelly and sandy hill-side, and raised a crop of corn, manuring the ground well. The corn was followed with potatoes, and each year he had a full crop of apples, an unusual thing for Greening or Newtown Pippin trees. He found that apples paid better than strawberries, at any rate, and very nearly as well as corn or potatoes. The third year came. I had no idea he would get a crop the third year running, but he was enthusiastic, and asked advice of his neighbors. The trees had grown pretty wide, made a good many suckers, and the lower limbs were in the way of cultivation. We cannot let an

orchard have the land to itself, but must follow the regular rotation of corn, potatoes, oats, clover, and timothy, varied according to circumstances. I recommended a severe "cleaning out," pruning not only superfluous limbs, but the lower ones, and thinning out the tops. As a result, he got a good crop again. This was last year. Now (June), they are well set for another crop. The land has been moderately limed, and planted with potatoes manured in the hill lightly. We have had good weather, so it is quite likely that the fruit will hold on, especially as the blooming was not profuse, so there are not many more apples set than should ripen.

This bit of experience illustrates several easily available ways of making this important crop much more reliable and regular than it usually is in this part of the State. 1st. Tillage and manuring. 2nd. Pruning. 3rd. Liming, or perhaps applying ashes—wood ashes are not equal to lime, or a substitute for it, but often produce similar and excellent effects. The Colonel's experiments have left the insect question altogether unnoticed. In such a year as the present, these pests will be very likely to "show their hand," and may beat him, for they play a strong game sometimes. There has been such a full set of fruit for two years, that with the small number of apples now upon the trees, the work of the codling moth may be particularly apparent, and so a very incomplete development of fruit may take place. When there is a large set there are apples enough for the worms and for a crop too, but not so when there are few. That is one difficulty that the trees which bear every year must contend against. The insects breed beneath them and in them, and they maintain a constant supply, while the alternate year trees, those which give a crop only once in three or four years, are likely to be comparatively free, when they do bear, from this annoyance.

Orchard Grass.

Writing of orchards makes me think of a recent entry in my memorandum book, "Orchard grass in full blossom June 5th." I have no record of other years, but think it is several days late this year. It usually blossoms just in advance of or nearly simultaneously with red clover. I like it better and better every year for home consumption. It is not so good to sell, and every farmer should have a field or two of orchard grass and clover to begin haying with. It enables him to begin two weeks earlier than if he waited for timothy to be fit to cut, when clover and timothy are sown together. The hay made thus early, is green and beautiful, fragrant and cures easily, for the grass is stiff enough to keep the mass, even when in cocks, light and open, so that there is little danger of heating as when there is much fine grass, such as red top, etc.

Tim Bunker on Hard Times and Central Park.

A CONFIDENTIAL LETTER TO THE EDITOR.

MR. EDITOR: You will recollect just afore the war, that Sally Bunker and I went down to Central Park, when Fred Olmstead was in his glory, turning things topsy-turvey, making dry land out of swamps, and turning dry land into pond holes, and setting things to rights, according to his notion. Well, you see, Sally has not been there from that day until this, which has just passed. We got home from the city to-day, after a week's absence, visiting Mr. Slocum's folks, and seeing the sights. You see, here three or four years ago some Hookertown people who lived in the city, took it into their heads to give Josiah a call to their church, and he was fool enough to leave Shadtown and go down there to live. I told him he missed it at the time. But he complained of the small salary, and the narrow field of labor, and went off to the city, where I guess the times have been about as hard as they ever were in Shadtown. I should not wonder if he had been homesick for the Shadtown parsonage and the garden a good many times since. I know his wife has, and little Tim and the rest of the children. There is quite a flock of 'em now, and it was when the seventh son had come to town, and Mrs. Slocum was getting about, that she wrote to her mother to make her a visit. It is rather hard times up here, and has been for the last two or three years. The panic seems to last an uncommon while. People who have got money are afraid to do anything with it. They do not want to buy property now, for they expect it will be cheaper next month. Everybody seems to be living from hand to mouth. Manufacturers have failed, and the factories are idle. Some of them have burned down, and folks say they are cases of spontaneous combustion. They do not build ships in Shadtown as they used to. They only have a few smacks and fishing boats on the stocks now, and the ship-yards look awful lonesome. The foundry only runs half the time. Some of the lawyers have died, and the doctors have moved out of town, and where they have gone to nobody seems to know. Jake Frink who has never been able to make the two ends of the year meet, says he must reduce expenses or things will go to smash at his house. Seth Twiggs has been trying to leave off tobacco, and after a hard struggle has compromised on smoking ten pipes where he used to have twenty. The wretch has bought a bigger pipe since, I have noticed, which is a good deal the style of political reform in our days.

Things did not look cheerful out here, and Sally said she guessed she would go down and see the grandchildren. Of course we had to go up and see the Park. Josiah keeps a horse and carriage. He used to do that when he preached in Shadtown on a salary of twelve hundred a year. As he cut the hay and oats on his own land, and did the foddering himself, and worked the horse enough on his land to pay for his keeping, his rides did not cost him much. And the Shadtown air was just as good for his wife and children as the air of Central Park, for aught I can see. After we got started in that great current of horses and carriages that sweeps up Fifth Avenue every afternoon, I says to Josiah.

"Now be honest, and tell us just what it costs a year to keep that animal."

"About a thousand dollars," said he, "reckoning everything. You see the horse cost eight hundred dollars to begin with, and you have to reckon the interest of the money and the depreciation of property and the risk of lameness and sudden death. Then stable room is expensive, and you have to keep a man to take care of him and the carriage, and to drive out the folks when you do not want to go yourself. And if you contract at the livery stable for the free use of a team as often as wanted, it will cost you about double, say two hundred dollars a month."

"Is it possible!" said I. "I see that city ministers need large salaries, and a good bank account beside."

Here Mrs. Bunker lifted her gold bowed spectacles that Josiah gave her, and wanted to know if we had got into a funeral procession. She said she thought the Mayor must be dead, or some other great man, as she never saw so many carriages in line before in her life. Mrs. Slocum had to tell her the same line of carriages was out every afternoon, and that the dead and the mourners went out to Woodlawn by steam cars.

"That is just awful," said Mrs. Bunker, "hurrying folks into their graves by steam! I don't want to live here."

Just then we passed a carriage with two clerical-looking gentlemen, with black suits, white chokers, and silk hats, upon the driver's seat.

"Now, Josiah," said Mrs. Bunker solemnly, who was prepared to believe almost anything of city habits, "I want to know if it is the fashion down here for rich people to keep retired ministers to drive them out to the park?"

"Not exactly, mother," said Josiah. "People who have not much dignity of their own, dress up their coachmen and footmen in ministers' clothes, and make a 'fair show in the flesh.'"

"What a shame," exclaimed Mrs. Bunker. "I thought you had a law agin forgery and wearing masks."

I was astonished to see the constant succession of carriages and fine horses from Madison Square clear to the Park, and into it as far as we rode, which was pretty much all over. There was a row of horses and carriages about ten miles long, and I got to speculating upon the cost of keeping these animals and supporting the show of which these establishments are only a small part. We came across a policeman dressed in gray uniform, who seemed to be paying strict attention to his own business, for he did not notice the people much.

"How many visitors do you have here in a day?" I asked.

"Over a hundred thousand in the best of the season," said he.

"And how many of them come in carriages and on horseback?"

"Over one-half. We have had twenty-five hundred on horseback, and fifty-three thousand in carriages in one day."

Now, Mr. Editor, it seems to me that we have got some facts here that are better worth looking at than any of Fred Olmstead's handiwork in the Park. I admit it is all very fine, the avenues, the horse tracks, the rambles, the lakes, the trees, the flowers, and especially the Southdown sheep that we saw in the pasture. It is about as handsome as the White Oaks, and when the trees get grown, it may come up to Yawgogne Clove in Shadtown. But the question is, whether we can have all these fine things and be honest. You see, of all these people who come out here in carriages, they do not average two folks to a horse. A good many drive out single. Some are selfish old bachelors or lonesome widows with two horses for one passenger. I guess 30,000 horses is a safe calculation for the horses that come out here on a pleasant day, and according to Josiah's calculation, the cost of keeping is three millions a year. But there are not more than half the fancy horses in the city out here on any one day. Sixty thousand horses at least at an expense of six million dollars, is what New York City pays for rides in a year. Then this extravagant display of horseflesh is only a small item in the family expenses. One thousand a year for a horse indicates ten thousand on an average for other things, theatres, balls, excursions, dress, rents, liquors, cigars, to say nothing of the necessaries of life. If only fifty thousand families are living in this way, it costs five hundred millions a year, or about a quarter enough to pay the national debt. And this kind of extravagance is going on all over the country, in the small towns and villages, as well as in the city, every family trying to live a little faster than the family across the street, whether it can be afforded or not. Is it any wonder we have panics, failures, and general depression of business? I take it, Mr. Editor, that the country has got to be run on the same principles as I run my farm up here in Hookertown. I am doing a good business, and can keep enlarging, with more drains, more subsoiling, and more stock, just as long as I can pay expenses, and save something at the end of every year. But if I invest in a thousand dollar horse and carriage, and keep a man to drive it, and turn my best meadow into a lawn and flower-garden, and keep a man to take care of it, and borrow money every year to keep up this style of living, I guess there would be a panic in Hookertown right off. I should lose my office of Justice of the Peace, and Jake Frink would turn up his nose at me.

Hookertown, Ct.,
May 25th, 1876.

Yours to command,
TIMOTHY BUNKER, Esq.

An Artificial Mother for Chickens.

The whole difficulty in rearing chickens, artificially, consists in the necessity for some adequate provision for keeping them warm, and an effective substitute for the brooding of the hen. For twenty-four hours after it has emerged from the egg-shell, the chick derives its nutriment from the remains of that which has been supplied to it during incubation, and needs no food; warmth and rest being all that it requires. If this warmth is not supplied, the chick perishes before it is ready for the reception of food. The greatest care then, of the artificial producer of chickens is, to provide a substitute for the brooding of the hen both during the period

when the chicks are incapable of caring for themselves, and that when they only need shelter at night and during cold spells. Various devices have been proposed for this purpose, but the majority have failed for want of perfect adaptation to the helplessness and weakness of the chicks. In some the chicks have become entangled in the woolly covering, and have died in the efforts to extricate themselves; in others the impossibility of keeping them free from filth and vermin have caused their failure, and in others the heating process has been ineffective or irregular. An artificial "mother" that would meet all the requirements of the chicks,

Fig. 1.—FIRST MOTHER.

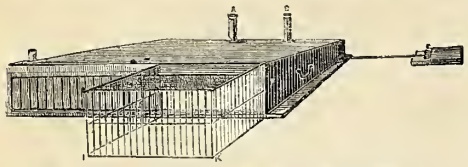


Fig. 2.—COMPLETE MOTHER WITH RUNWAY.

that would be cleanly in use, easy to take apart for cleaning, and that would give ample liberty and safety of movement to the chicks, has long been sought by poultry fanciers. A mother which is said to meet these necessities of the case is used by a correspondent of "The Country" (Eng.), and is described in that journal with the illustrations here given. It is intended to be used not only in conjunction with an artificial incubator, but also as a protector for chickens hatched in the usual way, and which may be transferred to it instead of being brooded by the hen, the hen being discharged from this duty and set to laying again. For this purpose it has been employed in England by those who raise poultry for the market, with much success. The apparatus consists of the "first mother," shown at figure 1. This is a wooden frame about 12 x 16 inches, covered with a piece of canvass, which has

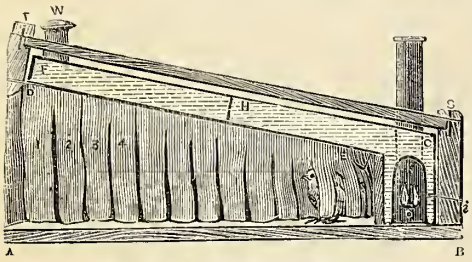


Fig. 3.—SECTION OF MOTHER.

strips of flannel sewn to it by one of their edges. These strips are about three-quarters of an inch apart, and after having been sewn to the canvass, are cut through with a pair of scissors in such a manner that they hang down loosely near to the ground, and permit the chicks to pass amongst them with ease and safety from entanglement. This is probably as near an approach to the feathers of the brooding hen as may be made. At one end of the box the cover reaches to within two inches of the ground, and at the other end to within four inches. The covering and the flannel strips can be removed from the frame and scalded and washed when necessary. Dry earth or sand is scattered beneath the frame to a depth of half an inch, and is frequently renewed. The needed warmth may be supplied either by means of an india-rubber bag or two or three quart bottles filled with hot water and laid upon the cover. A piece of flannel or blanket, thickly folded, may be laid upon the water bag or bottles to retain the heat for several hours. The chicks nestling closely beneath the flannel strips, will maintain their heat during a whole night when thus protected. For the protection of very early chickens, or of those hatched in the fall or winter, this "mother" would be better than the hen herself, as she is apt to lead her brood forth from shelter regardless of the weather, or if confined, to trample them to death in her efforts to escape. Chicks thus protected may be safely taken from the nest as soon as hatched. They may be fed at first with chopped hard boiled egg or stale bread crumb soaked in water (but never in milk until they are older). If needed, a runway of wire netting as shown at *G*, *H*, *I*, *K*, figure 2, may be attached to the mother by a hook seen at *F*. When a large number of chicks are reared, this "first mother" will be used only as a temporary one, and as the chicks acquire strength, and become used to feeding and finding shelter, they are removed to the final mother, figure 2. This is three feet long and 16 inches wide, holds 50 chicks at once, and will serve for 120 chicks or more through a season of several weeks. The warming apparatus in this is a metal tank (*F*, *G*, fig. 3), which is made to divide at the lower part, *K*, to receive the lamp, *i*. There is a division in this tank at *H*, by which a current is established from the warmer point near the lamp to the cooler point furthest from it. This is shown by the arrows seen in figure 4. There are two chimneys for the escape of the superfluous heat from the lamp, seen at *A*, *B*, figure 2, in which is also shown the lamp, *E*, with the long pipe which supplies the burner, and which enables the heat to be applied either to one end or to the center of the tank—one chimney being closed—when cooler or warmer weather makes it desirable to increase or lower the heat of the mother. The tube *W*, figure 3, is used to fill the tank or to test the

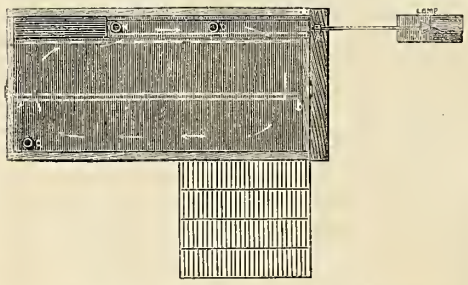
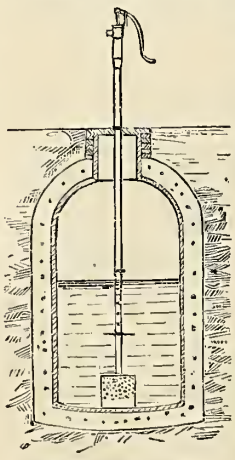


Fig. 4.—TOP VIEW OF FIGURE 2.

temperature of the water. The frame of the mother is shown at *A*, *B*, *S*, *T*, figure 3; at *S* and *T* are cleats which hold in place the cover of the frame, which is lined with felt to retain the heat. The strips of flannel (1, 2, 3, 4), are sewn to a canvass-covered frame which is movable, and may be slipped out and in when necessary; the corners of the frame are shown at *D*, *E*. A piece of board is fitted against the lower side of the tank to moderate the heat. The chicks pass in and amongst the flannel strips as shown in this engraving. At figure 4 is shown a top view of the mother, with the two chimneys, the supply tube, and the mode of circulation of the water around the partition, *A*, *B*. Handles are fixed to the frame of the mother (see fig. 2), by which it may be moved when necessary.

A Filter for Cisterns or Tanks.

Rain water collected from roofs is always more or less impure from dust, soot, leaves, or the droppings of birds, and in time these collect in the tank and render the water undesirable even for washing. We have given several methods of filtering such water, and now present one which has been described in a recent Agricultural Gazette. It is called the "nose-bag filter," and is shown in the accompanying engravings, which render much description unnecessary. The filter may be made of earthenware, cement, or of soft brick. There is an outer cylinder and an inner core, both of which are perforated, but the perforations of the outer cylinder do not reach the bottom, hence the sediment in the cistern is excluded, and those of the core are only at the bottom, so that the water is forced to pass through the filtering material—sand, gravel,



1.—SECTION OF CISTERN.

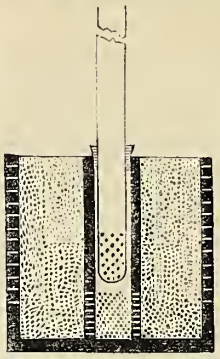


Fig. 2. SECTION OF FILTER.

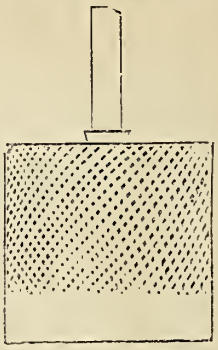


Fig 3. COVER OF FILTER.

and charcoal—before it can be pumped up. The suction pipe needs to be well packed into the core, and a rubber or leather ring should be closely fitted, to exclude all water that has not passed through the filter. The cistern and pump are shown at figure 1; a vertical section of the filter at figure 2, the dark shading represents a layer of charcoal; the lighter shade, coarse gravel; and the lightest, which is next to the inner cylinder, fine gravel. At figure 3 is the perforated outer cylinder, and the collar around the pipe; and at figure 4 a horizontal section of the filter is shown.

Fig. 4.—CROSS-SECTION.

Dry Cellars.

No house that is built above a wet cellar can be healthful, and no damp cellar is a fit place for keeping milk, butter, vegetables, or any articles of food. Localities where the soil is not naturally drained, or is retentive of water, and where the surface is level, should not be chosen for building sites. In cases where the house is already built, and the cellar is damp or wet in consequence of an unfortunate selection of ground, some method should be found for draining the soil and removing the water. This is very easily done when the surface is rolling and a drain can be dug from the bottom of the cellar, and made to discharge at a lower level; but where the surface is level, it is not possible to do this. Several correspondents who are in this predicament have applied to us for some remedy, and we suggest the following plan. As nothing can be done outside of the cellar, a drain should be dug all around the cellar, inside, as near the foundation wall as possible, and at least two feet deeper than the bottom of the wall. At the bottom of the drain two-inch round tiles should be laid so carefully that they cannot be displaced in covering them. These may be covered and the drain filled to the top with

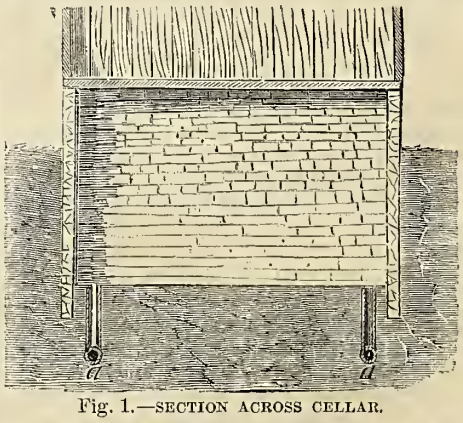


Fig. 1.—SECTION ACROSS CELLAR.

gravel. The tiles should be carefully joined at the corners of the cellar, and at the most convenient part of the cellar a well or cistern should be dug,

into which the drains may discharge. A pump may be fixed in the kitchen above, connected to a pipe which passes into the well, and the water may be utilized for various domestic purposes. The well may be arched over or covered with a stone slab, and the whole of the cellar floor and walls may be covered with hydraulic cement. As the flow of water from the outside is completely cut off, the cellar floor must be dry, unless the well

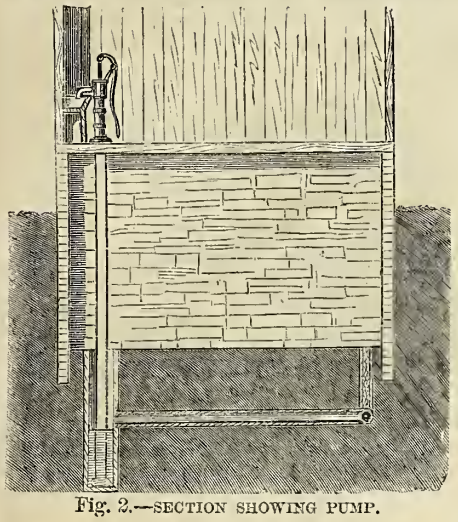


Fig. 2.—SECTION SHOWING PUMP.

should overflow, and when this is feared, the cover may be removed so as to watch the rising of the water. This should be done at those seasons when there is most water in the soil, as in the spring or after heavy rains. A section across the cellar floor in which the relative positions of the drain and foundation walls are shown in figure 1, and at figure 2 is shown a section lengthwise of the cellar with the position of the well, the drain discharging into it, and the pump in the kitchen above. In case the flow of water is more than can be used in the kitchen, the excess should be pumped into the sink to be carried off by the sink drain. We have seen such an arrangement as this which operated satisfactorily, and not only thoroughly dried the cellar, but by carrying the well to a depth of eight feet, furnished a permanent supply of excellent water.

Unloading Corn.

By-and-by will come corn-husking, and every little help that will ease the troublesome labor of transferring the corn crop from the field to the crib will be gratefully accepted. We have used both of

Fig. 1.—BOARD FOR UNLOADING.

the contrivances here shown (figures 1 and 2), to help in getting the ears out of the wagon-box. At the start it is difficult to shovel up the corn, and until the bottom of the wagon-box is reached, the shovel or scoop cannot be made to enter the load. But if a piece of wide board is placed in a sloping position, resting upon the tail-board of the wagon

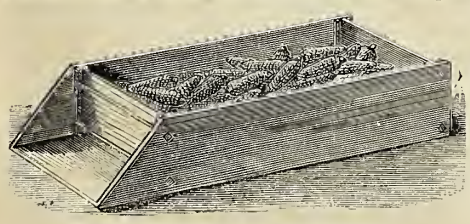


Fig. 2.—UNLOADING ARRANGEMENT.

(fig. 1), the shovel can be used with ease at the commencement of the unloading. Another plan is to make the box two feet longer than usual, and place the tail-board two feet from the end (see fig. 2). When the tail-board is lifted, the ears slide down into this recess, from which they can be scooped with ease.

Stalls for an Octagon Barn.

In describing an octagon barn in July, we mentioned that the stalls might be made low, so as to exhibit well cared for stock in an attractive manner. Some inquiries have been made as to the modes of constructing such stalls, to which we give in reply descriptions and illustrations of some that would be appropriate. At figure 1 is shown a series of double stalls, separated by short partitions, not more than three feet in length, and four feet in hight, so that in looking over the stalls, all the cattle are seen. These stalls may be made six feet wide, and five feet long, arranged with a gutter at the rear to receive the droppings, eight inches deep, and a feed-trough at the front, divided by a small partition into two feed boxes, one for each cow. The cows should be secured by chain-ties,

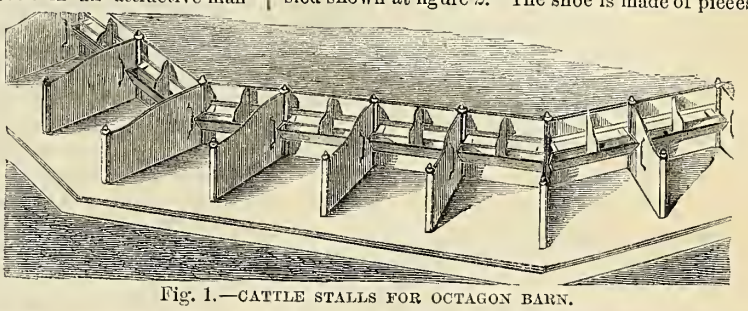


Fig. 1.—CATTLE STALLS FOR OCTAGON BARN.

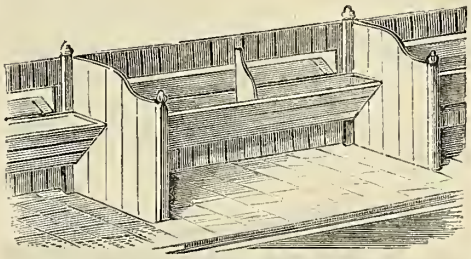


Fig. 2.—PLAN OF SHORT STALLS.

with rings sliding upon iron rods fixed to the sides of the stalls. The feed troughs may be filled from the feed passage in front of the stalls, through falling doors lengthwise of the stalls. The stalls should be built upon posts, firmly mortised into the beams beneath, and should be strengthened by stout straps of iron, let into the posts and beams flush with the surface, so that there may be no projecting edges to injure the cattle. At figure 2 is shown a plan of stalls, similar to the preceding, excepting that the partitions are shorter, but perhaps less safe, as the cows might possibly tread upon each other, and thus cause injury to the teats and udders.

Cutting Marsh Hay.

The investigations of Prof. Storer, of the Bussey Institution, regarding the feeding value of marsh or salt hay, should have the effect of raising this coarse and cheap, but often neglected fodder, in the estimation of farmers. Thousands of tons of marsh hay made from the coarser kinds of grasses, sedges, and even such rushes as that known as the "black grass" (*Juncus Gerardi*), of the wet sea-side swamps, are wasted every year because they are supposed to be useless as feed. But on the contrary, many farmers have annually gathered such hay with care, and have profitably fed it to their cows and other cattle, along with some ground feed. And now Prof. Storer has analyzed these coarse and neglected plants, and has found that they are both wholesome and nutritious. The average composition of five samples of salt hay was found by him to be as follows, viz: water, 8.40 per cent; ash, 6.93; albuminoids, 6.33; carbo-hydrates, 45.38; and cellulose, 32.96 per cent. "Black grass" was found to contain 84 to 87 per cent of dry organic matter, 2 to 2¾ per cent of fat, and more than 1 per cent of nitrogen, the seeds being doubly as rich in fat and nitrogen. Fresh marsh hay was found equally valuable for feeding.

To continue to neglect this coarse hay, would be a waste of resources which should by all means be economized. But there are some wet, undrained marshes upon which it is disagreeable to cut the grass, as one must work with wet feet, and from which it is difficult to draw the hay, because the soft soil will not bear horses or cattle upon it. These difficulties may be overcome by making use of the swamp shoe shown at figure 1, and the light sled shown at figure 2. The shoe is made of pieces of ash or other tough wood a quarter of an inch thick. For want of anything better, pieces of the staves of flour barrels will answer the purpose well. The pieces should be four inches broad, and fastened together with broad-headed, soft iron nails (clout nails), such as are used in building boats, and which may be clenched. A staple made of light wire is driven into each side of the center piece, and a leather strap is passed through these and over the toe of the boot, and the ends then being crossed in the manner of an old-fashioned sandal over the instep, are buckled at the back of the foot over the heel. The foot is attached to the shoe only by the toe, and the heel is free, so that when the wearer takes a step, the heel can be raised and the shoe will hang to the toe only. As the hind part of the shoe is the heavier, that drags upon the ground, and the forepart only is lifted when a step is taken, exactly as in the case of walking with a snow-shoe. It is necessary to take wide steps, so as not to place one shoe upon the other in walking, the consequence of which would be a trip and a probable fall forwards. But this is easily avoided after a little practice upon dry ground. When these shoes are worn, the mower may pass over the softest places in safety, and if he takes the precaution to thoroughly saturate the soles of his boots with tar and dry it in before a fire a day or two previously, and smear the uppers of the boots with tallow, or some waterproof blacking, he may have dry feet after a day's work in a very wet swamp. If there are high and dry knolls in the marsh, the cut grass may be drawn thither upon a light sled made as shown in figure 2, to be spread for drying, or to be stacked. This sled is made of strips of oak or pine fencing, six inches wide, and three-quarters thick. The runners are steamed at each end; or soaked in boiling water; or sponged with water, and the wetted part held close to a fire until the ends can be

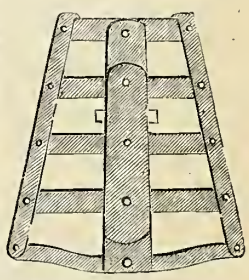


Fig. 1.—MARSH SHOE.

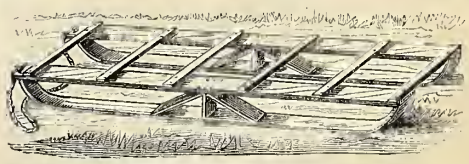


Fig. 2.—MARSH SLED.

bent into the shape shown. They are then fastened to the raves, which are of similar pieces of wood. A small piece of hoop iron or of tin from an empty fruit-can should be nailed over the joint to strengthen it. A piece of fencing is placed beneath the middle of the rave and nailed there above and below, as a support, and another piece is nailed upon

each side of this as a brace to stiffen the sled. The two runners are then held together by as many benches as may be thought proper, and the sled is made. A man can easily draw 300 or 400 lbs. of hay upon this over a smooth meadow, and in this way the cut grass may be drawn on to dry ground, where a team can be brought to it, or left until the surface of the meadow is frozen. When managed thus, the hay may all be cut from almost any marsh, and if brush is kept down and the marsh rightly managed, from two to four tons of hay, worth nearly as much as common meadow hay, may be gathered from any acre every year for a lifetime. In this way a piece of otherwise useless marsh may be made worth as much as any acre of the farm.

Hints and Helps for Farmers.

BY L. D. SNOOK, YATES CO., N. Y.

TETHERING ANIMALS.—It is frequently desirable to pasture a certain part of a field, and at the same time not convenient to fence off a portion. In such case tethering may be resorted to, and the Adjustable Sweep Tether, shown in figure 1, will be found convenient. A post four inches in diameter, and four and a half feet in length, is driven one foot into the ground; in the top is an inch hole four inches in depth, into which a hard wood pin fits loosely. The sweep is from 15 to 20 feet in length. Two feet from the large end, a hole an inch and a half in diameter is bored, and this fits over the pin in the post. A weight is suspended at one end as shown; at the small end of the sweep a strap or rope ten feet in length is attached, to which is secured the end of the halter. The weight elevates the halter end of the sweep, but yet allows the animal to feed at all points within the length of the halter, and also prevent injury from any entanglement. A Combined Sliding and Swinging Tether is shown in figure 2. This is less cumbersome than the above. The sweep is 15 feet in length and 2 inches in diameter; at one end an iron is attached with a hole in it two inches in diameter, the opposite end is provided with a wheel five inches in diameter. A rod three-quarters of an inch in diameter, 15 inches in length, with a loop at the top, as shown, is driven in the ground, through the hole in one end of the sweep. The halter is attached to a sliding ring, which by its self-adjustment traverses easily back and forth as the horse feeds.

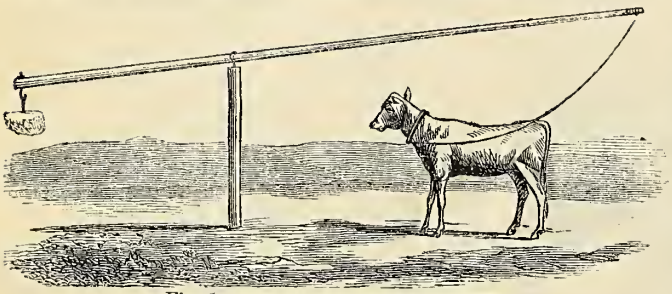


Fig. 1.—ADJUSTABLE SWEEP-TETHER.

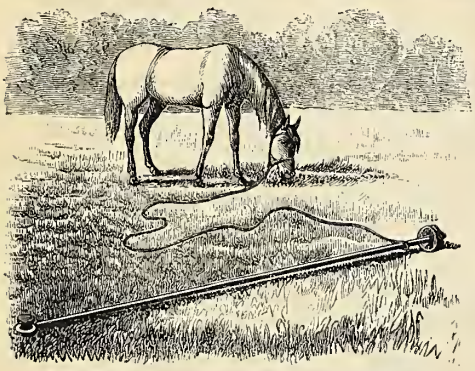


Fig. 2.—SLIDING AND SWINGING TETHER.

THE RAIL FENCE GAUGE.—The common method of laying off the corners of a rail fence, is to pace or guess at the distance apart, and the proper angles of the corners. The consequence is that few rail fences are in line or have uniform angles. If a gauge similar to the one represented in figure 3 were used, this fault would be avoided. First I lay off a pattern corner in accordance with the length of rails or exposure to heavy winds. I then take two or three inch strips of uniform length, and just long enough to reach to the center of the foundation stones, shown in the engraving, then nail one end of each together and connect midway by a third strip, which also serves as a handle when moving it. A line is drawn as shown, and the ends of the gauge indicate the corners along the line. This arrangement is inexpensive, the corners can be laid out rapidly, and when built, the fence will present a uniform appearance, which in itself more than repays the little extra labor required.

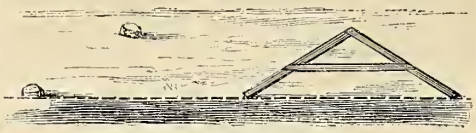


Fig. 3.—RAIL-FENCE GAUGE.

STONE BOATS.—For moving plows, harrows, etc., to and from the fields, and for many other purposes, a stone boat is far better than a sled or wagon, and is many times cheaper than either. Two plans of construction are illustrated. The boat shown in figure 4 is of plank, six feet in length, one foot at one end being sawed at the angle shown. Three planks, each one foot in width, will make it of about the right proportion. A railing 2x3 inches is pinned upon three sides, while a plank is firmly pinned at the front end, through which the draw-bolt passes. That shown in figure 5 has some advantage over the former, a cheaper quality of wood and of shorter length can be used, and when one set of runners is worn out, others can be readily attached without destroying the frame. Oak or maple plank should be used for the best boats, and when runners are used, the toughest wood at hand should be selected. Don't think because it is only a stone boat it is not worthy of being taken care of.

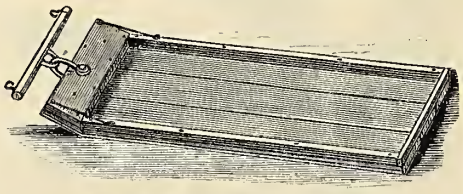


Fig. 4.—PLANK STONE-BOAT.

CELLAR CISTERNS.—The rain-water cistern or reservoir is a great convenience, yet how many farmers' wives, to get soft water, are obliged to set under the eaves or conductor, just before or during a rain storm, a barrel, wash-tub, or other utensil! The best, most convenient, and cheapest cistern is that known as the "cellar cistern or reservoir." The majority of cellars are large enough to have such a cistern, and a few feet square in one corner can be easily set apart for it. The square form will be found most convenient; the walls should be ten inches in thickness, the foundation should be six or eight inches below the level of the cellar bottom, and laid up with hydraulic cement from top to bottom, and finished with two coats upon the inside and one on the outside; the bottom should be filled one inch in depth with broken stone firmly pounded down and covered with two coats of cement. The two inside walls need not be as thick, as they rest against the cellar wall. If constructed when the cellar is made, the cellar wall forms two sides of the reservoir, and these should be laid up with small flat stone, and cement applied freely. The wall may be built up to 18 or 20 inches of the joists, leaving room enough for a person to enter to clean or repair it. The inlet pipe is placed as shown in the illustration (fig. 6). A flat stone should be laid on the bottom for the water to fall upon when nearly empty. The outlet pipe discharges all superfluous water into the drain when the reservoir is nearly full, and it should be larger than the inlet pipe, to prevent any accidental overflow. A reservoir 4 feet wide, 8 feet long, and 5 feet high, inside measurement, will hold 30 barrels.

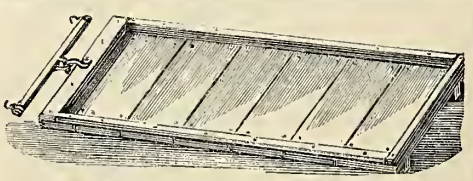


Fig. 5.—STONE-BOAT WITH RUNNERS.

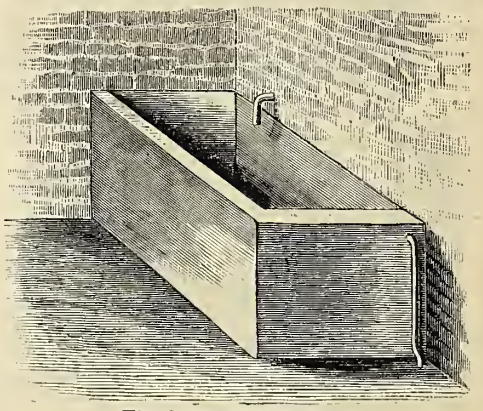


Fig. 6.—CELLAR CISTERN.

Hog Pens and Hog Cholera.

The weight of testimony regarding "hog cholera," or intestinal fever, as it might be more properly called, goes to show that it results either from a variety of circumstances, all of which, however, can be classed under the one distinguishing head of *neglect*, or violation of proper sanitary conditions, or else it is due to contagion or infection from diseased herds. This seems to be well founded, and if so, the remedy is a simple, although not an easy one. To change the whole manner of keeping swine, and to avoid the danger of infection from the herds of those farmers who never read and never learn anything, is no easy matter, however easy it may be to say that it must be done. Much may be done by example, and if those who can adopt healthful methods of herding their swine, avoiding damp, filth, crowding in the pens, and insuring cleanliness in the feed and water, and isolate their herds, will use these precautions, we do not doubt that the plague will be stayed. The first precautions should be to provide roomy, dry, clean, airy pens, supplied with clean water, and kept in a wholesome condition. It is not the influence of locality, but the better methods of herding that keeps the Eastern States free from this pest.

Flax Manufacture in America.

The commencement of a new manufacturing industry in this country is exemplified in the successful establishment of a small linen factory at Manchester, N. H. Some enterprising parties secured some land, sowed it to flax, gathered the crop, and prepared it for spinning, hired a Scotch flax-finisher, procured spinning machinery, and *one* loom, and worked up the flax carefully and slowly until by easy steps the business was thoroughly understood and mastered. The amount of money risked was small, and in case of failure, the loss would have been trifling. But it is precisely such ventures as this, and so conducted, that succeed, and this experiment has become a success. A linen manufactory is about to be put into operation, with a certainty of its being practicable and profitable. It was in this way that cotton manufacture began in the Southern States, where it is now a grand success. Woolen manufacture began similarly in the West where it is now firmly established, and we are well convinced that it needs only to be begun

in this careful manner, for flax manufacture to become also an established business in the West.

Cheap Production.

Cheap production is now the chief necessity of our agriculture. American farmers have now to compete with the whole world, and many of our competitors live very poorly and cheaply, and have land as cheap as ours. To compete with these, we are under the disadvantage that we cannot live as poorly or as cheaply as they do, our higher civilization not admitting of it. We must, then, raise larger crops with the same labor than they do, or use our labor more effectively. Many persons would have us believe that we must necessarily produce as high an average per acre as the English farmers do, or fail in our competion with them There is no necessity for this. There is a point in production beyond which we cannot go with profit. The Kansas or Nebraska farmer, who grows 25 bushels of wheat every other year for 20 years upon his rich, cheap soil without manure, and with a minimum of labor and cost, can easily compete with the English farmer, who pays an annual rent equal to the whole purchase money of his competitor's farm, and has to spend ten or twelve dollars per acre in manure. But if the western farmer should, by fertilizing his land, double its yield, the extra 25 bushels would not be grown at a profit. Here is a principle which affects our whole agriculture, and no rules can be safely laid down for us which violate this principle. We must discover the limit of the profitable production of our farms, each farmer for himself, and avoid any attempts to pass that limit. The whole secret of good and profitable farming is to extend the limit as far as possible; it is bad and unprofitable farming to either fall below that limit or to go beyond it. There are instances in which an extremely large yield is grown at a positive loss, as was the case of that farmer who raised 100 bushels of corn per acre with the expenditure of $102 worth of manure and labor, while he raised 60 bushels without the manure and with less than half the labor. This may be called "high farming," but it is not profitable.

Farmers and Middlemen.

We have received an interesting communication from a correspondent in Northwestern Texas, which opens up the question as to how far can farmers dispense with the services of those persons now known as "middlemen"; that is, those who come between the producers and consumers, receiving the farmers' produce, storing it until sold, and then distributing it to the consumers as they may want it, and purchase it. This term, "middlemen," has been used by some of those who take an active part in adjusting the relations of farmers with the rest of mankind as one of reproach, and the "middleman" has therefore become in the eyes of many farmers as a sort of parasite which lives upon them, and takes a portion of their earnings without giving any adequate return for it. Now it should be evident to any intelligent farmer that he cannot leave his farm, and go out into the wide world seeking customers amongst those who consume his produce, nor can those who need his beef, pork, flour, butter, eggs, and all the rest of the things that they need, come to him for their supplies, except in very few cases. Even in these few cases the greatly increased labor attending the disposal of his produce leads the farmer to charge a somewhat higher price for the trouble of retailing out his produce. But in the vast majority of cases the farmer could not reach a customer without leaving his work, losing his time, and going to a great expense. Somebody *must* do this service for him, and this is precisely where the "middleman," or the dealer, commission agent, merchant, shipper, jobber, and retailer, or whatever else he may be called, comes in. It is clear, then, that there is a need for this "middleman." The farmer does not stand by himself in this respect. We know of no class of producers that do not employ some person to dispose of their productions for them. In the early periods of society, a man who made a pair of shoes or a quantity of butter, would go out into the market and wait there until a customer appeared. In the same way the small farmer even now carries his produce in a basket, and the shoemaker hangs his shoes up in his shop or stall, to expose them for sale. But as soon as he enlarges his business and becomes able to do so, he ships what he has to sell to a large dealer, and this *one* man does the work for hundreds. This is one of those arrangements which, operating universally, has built up the present condition of society, and in fact is its principal foundation. Let us upset this arrangement, and society as now constituted would fall to pieces; every man would have to do every thing for himself; there would be nothing that depends upon the united and congregated effort of a people any longer remaining. There would be no houses, no roads, canals, ships, no government, and no society. We should return to barbarism. The question then arises, is there anything that is now done through this necessary agency of the middleman, that the farmer can do for himself? We confess this is a difficult question when viewed in its largest sense. In its narrowest sense we should say that there are some business operations which could be performed *for* the farmers by an appointed agent, who should represent a large number for whom now there are perhaps two or three or several agents. It seems very clear that there are too many persons to do the farmer's business. This is a disadvantage, because it tends to increase the cost of doing this service. If a number of farmers then can arrange to do their work through one agent, where formerly three were employed, the cost should be reduced in proportion to the expense saved. If there are two elevators at one railroad depot, where one would be sufficient, then grain could be shipped at half the cost, if one only were employed. But the farmers must be in the position to prevent the one elevator from raising the charges to the former rates, which the owner would do, if he had the power. The farmers must therefore control the elevators themselves, employing the hands to work it. This they can only do by owning it. To own their elevator then, is not only legitimate, but actually necessary for them to do; *if they possess the capacity to manage it as well as such a business should be managed.* They would then have their grain shipped as cheaply as might be possible. This is an illustration of what might be done, and this modification of present business arrangements could be carried just so far as the farmers possessed the necessary business capacity and experience to properly manage their enterprise, and secure the best efforts of their servants, but no farther.

The field for these business enterprises at present would seem to be limited to those which do not require a technical education for their conduct and operation. For instance, an elevator, a pork packing establishment, a traveling steam thrasher, a grocery, dry goods, or shoe store, a storage warehouse, a dock and a ship for carrying their goods to foreign countries, or a canal-boat for conveying produce to a distant market, would all seem to be within the powers and capabilities of a number of intelligent farmers; but a railroad, a woolen or cotton factory, a machine factory, and similar mechanical operations, which require for their successful working much hardly acquired technical skill, or great business experience, which can only be profitably effective when the operator is the owner of the establishment, would seem to be outside of the farmer's province, and necessarily doomed to failure in his hands. We see no reason why farmers should not look towards the cheapening of the services of those whom they employ as their agents for the disposal of their produce, and employ their spare capital in the direction pointed out, as soon as they have exhausted their efforts to make their farms productive, and have acquired the necessary business habits and experience for eventual success.

Prospects for Wool.—An extensive sale of woolen goods recently held in the city of New York has brought the woolen business down to hard bottom. A million and a half dollars worth of goods were sold at auction in one day, and thus prices and values were settled. It is well to know the worst, and the worst seems to be that the price of wool has touched bottom. As a hint to those who will now cull out their flocks and improve the residue against the expected return of better times, we give the current prices of wool in New York in June, as follows: Super Saxony fleece, 33 to 35c.; Full-blood Merino 30 to 33c.; Half-blood Merino 36 to 40c.; Common fleeces 33 to 35c., and Combing fleeces 50 to 55c. per lb. It will be seen that combing wool is the most valuable in the market, and that medium wools are worth more than the finest. Combing wool sheep are the best mutton sheep, and the value of one well-grown grade Cotswold, with its fleece, is equal to that of three fine wool sheep. Although a Cotswold costs more to feed than a Merino, yet the cost is not in proportion to the increased value of its wool and mutton.

A Sheep-shearing Machine.

(*See illustrations on next page.*)

Many efforts have been made to produce a machine for shearing sheep that should enable the work to be done as well as by hand, and with greater rapidity. Some inventive mechanic in England, some time ago, made a machine for this purpose, which was tried in Australia, but we had recently to record its failure there. Now we have a machine made by an American mechanic, who has spent eight years in perfecting it, and which seems to be perfectly adapted to the work required. We have tested the machine, and feel satisfied that a sheep can be sheared in five minutes much better than could be done by hand. The fleece is cut off very evenly and closely with this machine; the sheep cannot possibly be cut by it; and there can be no cutting through and injuring the staple. The cutting machine is shown at figure 1. The cutters, made precisely upon the principle of the mowing-machine knives, are of chilled steel, and are self-sharpening. The motion is communicated by means of compressed air, and 3,000 revolutions per minute can be easily given to it, although 1,500 revolutions are sufficient for a working speed. The air-pump is shown at figure 2. This is worked by a crank, and one man can produce sufficient power to work 25 machines. The air is forced from the pump through a flexible rubber tube, which allows ample freedom of movement. The working pressure of the pump is 5 lbs. per square inch, but it may be worked up to 45 lbs. by using an engine or a windmill. One pump is sufficient to work 25 of the shearing machines, and these may all be attached to a supply pipe, from which the compressed air may be let off or on to the machine as needed, by taps. Thus one pump will supply power for 25 shearers, and these having merely to hold and direct the machine, which barely fills the hand, and requires no muscular force to work it, are not exhausted, or required to stoop over the sheep—if benches are used—and may therefore work more quickly and certainly than with the ordinary hand-shears. The cost of shearing will be much reduced, and as the cost of the apparatus is very moderate, almost every person owning a flock of sheep would find it advantageous to use it. The larger engraving represents the method of using the machine, in which the position of the sheep is the same as in ordinary shearing; we should, however, recommend the use of a shearing-bench or chair, by which the necessity for stooping and bending over the work would be obviated.

The machine will also be found very useful for clipping horses, for which purpose the motive power used, and the method of attachment, are well adapted. It is also perfectly adapted for shearing pelts, instead of "pulling" the wool from them, by which the quality of the fleece is injured. The inventor and manufacturer is Mr. P. Anderson, of 321 East 22d st., New York, whose perseverance and ingenuity in perfecting this useful invention, certainly deserve great praise, and we have no doubt that the machine will be used as extensively in all the ways here indicated, as its merits demand.

Virgin's Bower—Leather Flowers—Clematis.

Among the horticultural achievements of recent years, there are few finer than the improvements that have been made in the genus Clematis. The fine hybrids that have been added to our gardens, especially by the labors of the Messrs. Jackman, are among the most beautiful of flowers, and though the newer sorts are rather expensive, there are a plenty of good older sorts that may be had at prices within the reach of all. For low climbers there is nothing so showy. Referring to the catalogues for these choice garden varieties, we would call attention to our native species, of which, take the country through, there are perhaps about 20. These vary a good deal in their habit. There are several erect herbaceous species which do not climb at all, but the majority are climbers, attaching themselves to bushes or other supports by twining their leaf-stalks around a twig or whatever else may be at hand, and afford interesting illustrations of this way of climbing. The most showy of our native species is *C. verticillaris* (formerly called *Atragene Americana*), a somewhat rare plant, found on rocky hills as far south as Virginia. This, which was figured in April, 1867, has solitary large bright purplish blue flowers two or three inches across, appearing in May. Those who are fortunate enough to meet with this plant, will be well repaid for the trouble of transferring it to the garden.

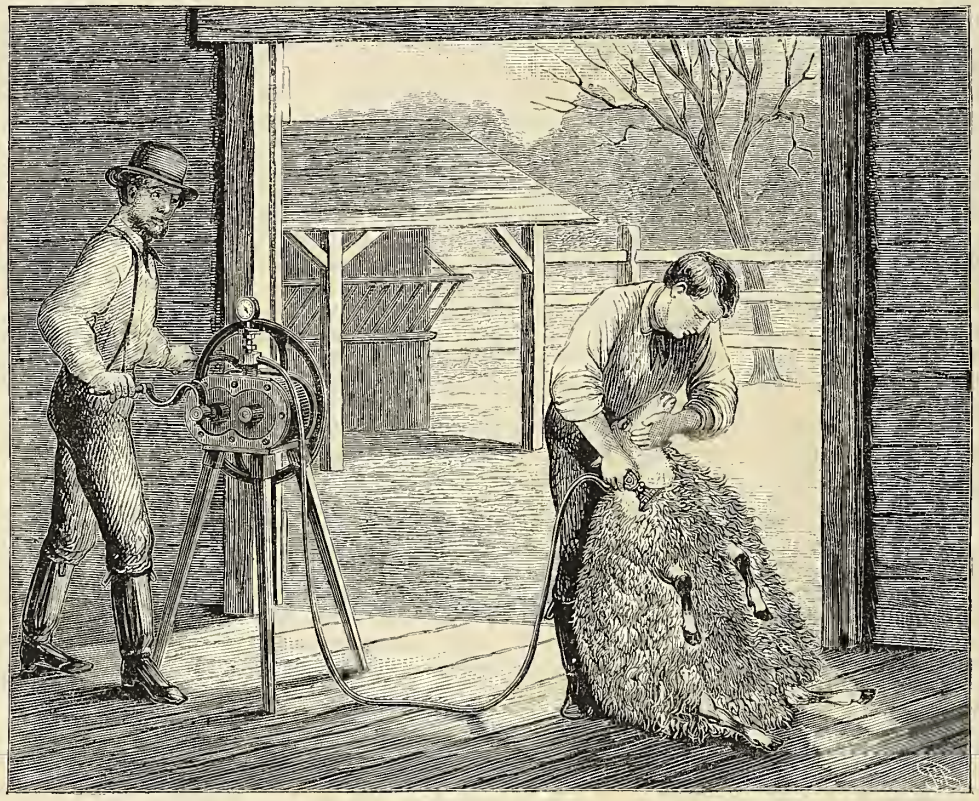


Fig. 3.—SHEARING SHEEP WITH THE MACHINE.—(*See page* 299.)

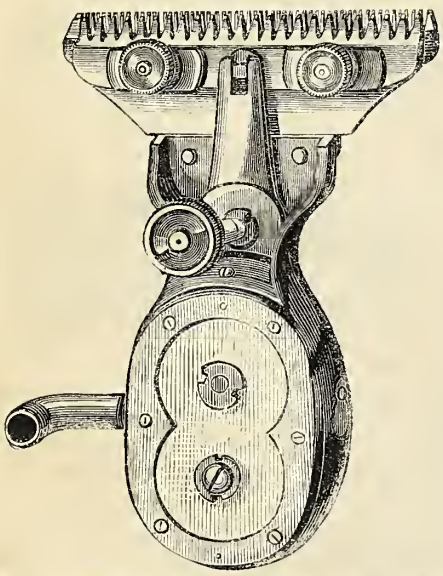


Fig. 1.—SHEEP-SHEARING MACHINE.—(*See page* 299.)

The best known, as it is the most common species, and found all the way from Canada to the Gulf of Mexico, is *C. Virginiana*, the common "Virgin's Bower," a name given to a related species in England, which is also called "Traveller's Joy" and "Old Man's Beard," names in some localities also given to our plant, the last mentioned referring to the hairy tails to the fruit which make the plant quite conspicuous in autumn. This was described in November, 1868, where will be found an excellent engraving. Its pleasing dark-green, cut or lobed leaves, the great abundance of its white flowers in July and August, when flowers are scarce, and the great woolly tufts it presents when in fruit, all make it a desirable climber, and being so common is within the reach of every one. When transferred to the grounds, where it is not obliged to struggle with other plants, it grows most luxuriantly, and when established, will climb to the hight of 15 to 20 feet or more in a season; a large portion of this growth dies down each winter, as only the lower part of the stem is woody. The flowers, though individually small, are in large clusters from the axils of the leaves, and clothe the whole with a sheet of white. As a covering for arbors or screens it is an admirable plant. Some have found it difficult to move from its wild localities; most wild shrubs are poorly furnished with fibrous roots, being crowded by other plants, their roots run to a great distance and throw out but few fibers; in removing all shrubs from the woods and copses, they should be cut back very severely to insure success. This grows very readily from seeds, which, if sown as soon as ripe, will give an abundant crop of young plants which are much more manageable than the wild ones. Still another group of our native climbing species of Clematis, have rather large bell-shaped nodding flowers, each solitary upon a long stalk in the axils of the leaves. These, while not so showy as either of the foregoing, are interesting plants, and worthy of a place in a collection. The calyx (for in these plants the showy part is not the corolla, but the calyx), in this division is remarkably thick and leathery, on which account the most common species, *C. Viorna*, is called "Leather flower." The engraving shows a southern species of this group, *C. crispa*, which we may call the "Crisped Leather-flower," the margins of the thick divisions of the flower being wavy or crisped. This species is found from Virginia southward, but proved quite hardy with us in the severe winter of 1874–5. The stem does not reach higher than 5 or 6 feet; the flowers are about an inch and a half long and of a delicate lilac-purple color. The Leather-flower, *C. Viorna*, already alluded to, has a similar habit of growth; it is found as far north as Pennsylvania and Ohio, and has rather large dark reddish-purple flowers. "Pitcher's Leather-flower" (*C. Pitcheri*), growing from Illinois southward, has a similar appearance, with its purplish flowers smaller than the one figured. It would be well for some pains-taking florist to try what careful cultivation and selection would do with this "Leather-flower" group of Clematis; one of them sometimes produces two or three flowers to the stalk in the wild state, which shows a tendency to vary, and if the flowers could be increased in both number and size, the cultivator would be well rewarded for his trouble.

The Large-flowered Pentstemon.

The genus *Pentstemon*, belongs to the same family—the Fig-worts, with the Fox-glove, Mimulus, Snapdragon, and other well-known plants. One species is found from New England westward, but most of them belong beyond the Mississippi, and extend to the Pacific, there being some 70 species belonging to our territory. The florist's Pentstemons are hybrids obtained from *P. Hartwegi*, *P. campanulatus*, and other Mexican species, and are very beautiful and showy plants; new varieties of these

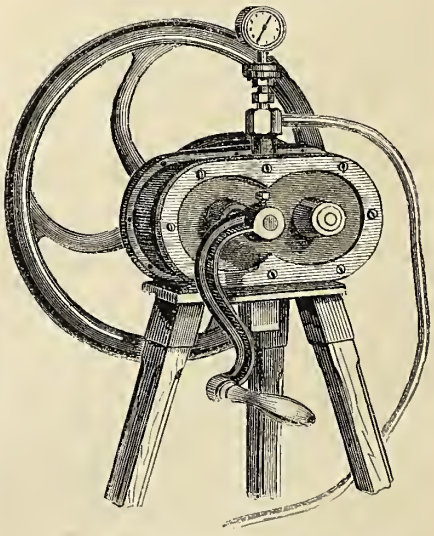


Fig. 2.—AIR PUMP.—(*See page* 299.)

are annually introduced with florists' fanciful names; unfortunately these are not hardy in northern gardens, and being rather difficult of management, have tended to make Pentstemons unpopular. There are, however, among our native species several which are perfectly hardy, and so beautiful that they must eventually become popular. The genus presents a remarkable range of colors—pure white, blue, purple, the most intense scarlet, and many intermediate shades. One of the finest is the Large-flowered Pentstemon (*P. grandiflorus*), found in Wisconsin, and westward and southward. The plant is robust in appearance, often reaching the hight of three feet, with thick, closely sessile leaves, which, as well as the stem, are smooth and of a pale glaucous green, which makes the foliage noticeable. The flowers are in a long terminal cluster; they are oblong bell-shaped, and about two inches long; the tube is inflated below, with five nearly equal lobes at the mouth; the color is a beautiful lilac-blue, pleasingly shaded, it being darker upon the tube than upon the lobes. The flowers appear in early June and continue for some weeks. The above engraving shows a flower cluster, somewhat under the usual size, but as in all wood engravings, the charm of color is wanting. There are other Pentstemons that are more brilliant, but taking into account the stately habit of the plant, its attractive foliage, and its compact cluster of large flowers, which, if not showy, are very handsome, we do not think that there are any more desirable. This year we had a bed containing several hundred plants, which, when in full bloom, formed a horticultural display that would delight the heart of any lover of flowers. As we looked upon these plants, we wished that those flower growers who are so impatient that they will not sow seeds of plants that will not bloom until another year, could have seen these Penstemons in flower; we thought that they would convince them that there were some perennial plants worth waiting for. More than that, the hardy herbaceous perennials when once obtained will, most of them, bloom for many successive years. Plants of the genus Pentstemon have not received any common name; the botanical name is from the Greek words for *five* and *stamen*; most plants of the family have four or two stamens, but in this a fifth is present, but sterile, or without any anther; it is often quite conspicuous on account of having a beard of long hairs, though this is not the case in the species in question.

THE CRISPED LEATHER-FLOWER.—(*Clematis crispa.*)

THE LARGE-FLOWERED PENTSTEMON.—(*Pentstemon grandiflorus.*)

Rhododendrons in America.

The magnificent display of Rhododendrons by the English nurseryman, Anthony Waterer, at the Centennial, will no doubt give an impulse to the culture of these shrubs in this country which nothing else could have done. It is true that fine Rhododendrons were exhibited by the Messrs. Parsons, of Flushing, N. Y., and Henry A. Dreer, of Philadelphia, but their plants had not the prestige of having come from abroad; they were only varieties of well tested hardiness, and were shown in the open air. Mr. Waterer's collection being of tender and hardy varieties together, and shown in a most effective manner, made an impression upon the visitors that the others did not, and we doubt not that his exhibition has done much to awaken attention to these admirable plants. Probably a very large majority of intelligent persons who visited the grounds during Mr. Waterer's show, first made the acquaintance of the Rhododendron, and probably many of these think it is a "brand new wrinkle" in plant culture, brought across the ocean for the first time. We are warranted in this supposition when we find so intelligent a writer as Mr. Howells, in a generally excellent article on the Centennial, in the July Atlantic Monthly, expressing himself in a manner which shows that rhododendrons are a novelty to him. After speaking of "English Azaleas," (whatever they may be), he says: "At the fact that these [azaleas] and a houseful of rhododendrons could be safely brought so far and made to bloom so richly in our alien air, one may fitly wonder not a little."—We do not single out Mr. Howells for special criticism, but as an illustration of the notices of these rhododendrons which have appeared in the various papers and magazines, and as showing that even our best writers, when they touch horticultural matters, are at once "all at sea."—"Alien air" indeed! The rhododendrons, were, so to speak, only brought home. All of those exhibited that are of any use in open culture in this country, are in good part "native Americans." The *Rhododendron Catawbiense*, native in our southern mountains, may be regarded as the foundation of the whole set of hardy varieties, and only those with a strong

infusion of native blood are sufficiently hardy to plant out in our Northern States. Those who have written about this exhibition have evidently regarded the Rhododendrons as rare exotics, for the reason that a shelter was put over the plants to prolong their season of bloom, while in England, they with several others, are known by the distinctive name of "American plants." That the rhododendrons were brought "so far," and then were "made to bloom so richly," is no reason why one should "wonder." If there is a plant that is indifferent to removal, it is a hardy rhododendron. Crossing the Atlantic is nothing in comparison with the treatment we have known them to survive. It is one of the very few plants that may be taken up from the open ground while in full bud or bloom, put into a pot or tub, or even have a mat around the ball of earth containing its roots, be exhibited for a week, and then be put back in its place and go on and make its buds for next year, without minding the disturbance. On this account, rhododendrons are capital plants for tenants, as they are as readily moved from place to place as the cooking-stove, or other household article. Now that thousands of people have seen this fine show of these charming plants brought from abroad, they will be surprised to know that quite as fine and larger collections are to be seen in this country; near Boston, the private grounds of Messrs. H. H. Hunnewell, C. S. Sargent, and E. S. Rand, Jr., contain really magnificent collections of choice rhododendrons, and the commercial grounds of Hovey & Co., at Cambridge, are rich in fine old specimens. Near New York, Messrs. S. B. Parsons & Sons, and R. B. Parsons & Co., of Flushing, have these plants by the acre, all of hardy, well tested kinds. We hope that those who saw the rhododendrons at Philadelphia, have been so impressed with their beauty that their cultivation will be more general than it now is. We have these many years set forth the claims of these plants, and have many times stated that we did not know how a given amount of money could be so satisfactorily invested as in rhododendrons. Some who have written upon their culture have prescribed such a preparation of soil as would deter any unskilled person from trying the plants. Perhaps for the greatest possible perfection, a peaty soil is desirable, but the plants will be quite satisfactory in any good soil that does not contain much lime. On a limestone soil, special preparation must be made, but ordinarily they will grow where any other shrub will succeed. The most brilliant varieties must, in the Northern States, be housed in winter, but there is a sufficient number of fine sorts, giving a wide range of color, from white through rose and lilac to the different shades of purple, that withstand the most rigorous winters of New England. No plant is better adapted to ornament a city front yard; a single plant, even, is attractive, and a group of contrasted colors still more so. We advise those who propose to plant rhododendrons, to confine their first attempts to varieties of well tested hardiness, and for this, the experience of our own dealers who make a specialty of these plants will be the best guide.

The Huckleberry.

[At the annual meeting of the New Jersey Horticultural Society, held in New Brunswick in January last, among other papers presented, was one on the Huckleberry, by Mr. C. W. Idell. This being a novel subject—indeed, so far as we are aware, this fruit has never before been mentioned in horticultural meetings—the essay was listened to with great interest, and was followed by a discussion. As Mr. Idell is one of our best known commission dealers, handling large quantities of all kinds of fruit, he naturally gave especial attention to the manner in which huckleberries are gathered for market, especially in New Jersey, and to the fruit in its trade relations. We give the portions of the paper which treat of the picking and marketing the fruit, and so far as we felt sure of them, have included, in [brackets], the botanical names, to connect the trade names with the plants that produce them. Ed.]

Persons who live in densely populated and highly cultivated portions of the State, cannot realize that in our counties bordering on the coast, we have thousands of acres of land that have never been tilled, whose surface is covered with forests of trees and bushes, that produce annually millions of bushels of these berries. The surface of the land on which this fruit grows, is mostly level and sandy, with the exception of the lower portion, which contain large swamps, where, until quite recently, this berry grew undisturbed, in all its native wildness and beauty. Large fires often break out in these districts, and devastate hundreds of acres, burning every tree and bush, but owing to the rapidity with which it travels, the heat does not always penetrate the soil sufficiently deep to destroy the roots of the bushes, consequently they soon spring up again with renewed vigor. Should these fires take place in the spring or early summer, the roots start readily, and by the fall often obtain a good growth, so that by the next season many of them begin to bear fruit, and from the second to the fifth year produce the largest berries and yield the heaviest crops.

Botanists place the plants producing our market huckleberries, in two genera of the Heath family. One, [*Gaylussacia*], has its leaves quite sticky when warmed by holding in the hand, due to minute specks of resin; the fruit of these has very hard seed, or little nuts in place of seeds. The others are Vaccinium, from the ancient Latin name.

The first to ripen, are those that are borne by bushes about two feet high, these [*Vaccinium vacillans*] grow on the higher and dryer portions of the land, and some say that where the surface is rolling, the fruit attains to a large size; these are a small, sweet, blue berry, and are covered with a fine bloom, and being hard, carry well.

The "Swamps," so called from their growing in the swamp-lands referred to, ripen next in order, and are the largest and richest of all the varieties. Some of them grow as large as the common black-heart cherry, are sweet, and very juicy, and are also covered with a bloom, equal to that which covers the Concord grape. They are very tender in their richness, which causes them to carry badly. [These are from *Vaccinium corymbosum*, very variable in the wild state]. This variety does not yield so quickly after burning, as the others, as it generally requires about three years to produce its first crop, yet in time it frequently grows to the hight of 10 to 12 feet.

The next in order of ripening, is the common variety with which you are mostly acquainted; it is medium in size, color light blue, sweet, without bloom, and is a good marketing berry.

Another variety [*Gaylussacia resinosa*], is medium in size, very hard, black, and glossy, and is known by the name of "Cracker." It has a tart flavor, and full of seeds which crack as you eat them, hence their name. They are not popular with the native consumers, but owing to their solidity, they are sought for by the shippers of this fruit to send to distant cities, where they do not have the privilege of selecting other and better kinds.

There is another variety that grows very abundantly in Ocean County, which I believe is somewhat confined to that section, and is known as the "Hogberry." When ripe it is of a grayish-brown, quite large, dry, and hard, consequently bears transportation well, but does not possess much flavor. [*Gaylussacia dumosa*].

A later variety is called the "Bill," or "Dangleberry," they are large, of a bright blue color, slightly acid, and quite juicy, they grow on long stems, hence their name, "Dangle." [*Gaylussacia frondosa*].

The peculiar feature of this fruit is, that when picked with the stems on, they keep dry, but when separated the juice oozes from the berries, and in warm weather soon sours them.

The latest variety is called "Shiny Blacks," on account of their being so glossy; they are a trifle tart, but possess a good flavor, and last until the frost destroys them. [Probably one of the varieties of *Vaccinium corymbosum*].

This fruit begins to ripen by the first of July, then a succession of ripenings take place the entire season until killed by the frost. The first arrival of Huckleberries in the New York market is eagerly sought for, and are frequently sold from $10 to $12 per bushel, but as the quantity increases, the price gradually declines until it reaches $4 per bushel, when large quantities are received and sold at this price, and were it not for the interference of other fruits, I question if the price would fall below that figure; but a large crop of peaches seriously interferes with them, as well as all other kinds of fruit. As all this fruit grows wild, all are free to go where and when they choose to gather it, consequently thousands of persons, mostly women and children, find it a source of much pecuniary profit.

Mr. David Rogers, of Cedar Creek, Ocean Co., N. J., a veteran "carter," to whom I am indebted for much valuable information, informs me that "he knew of a family of seven persons, mostly children, who made $25 per day for two weeks in succession, by picking berries, and quite a number of girls to make $5 per day; and it is a very common occurrence for a mother with her family, from five to six children, to gather from three to five bushels per day. Of course the receipt of cash was in proportion to the market value of the fruit, yet in the early part of the season they frequently sold them from $5 to $6 per bushel."—Now what these persons could do, others could do also, and it shows conclusively that a large amount of money is earned by the people yearly, in picking this fruit.

In an interesting letter from Mr. Rogers, he says, "If you wish to see a happy set of laborers, take a ride with a carter through his district when he goes to gather the berries, and see the group of smiling, happy faces that crowd around the wagons to exchange their berries for the money, for you must understand this point, they don't trust. True, they look happy, and are, but many of them dress in unique, if not beautiful style, but their dress is adapted to their work, and when you see these young women with torn dresses, or perhaps with a pair of pants on made of strong drilling, you would not realize that they were the same beautiful girls that you saw on Sunday at church, dressed in the richest of silks, as closely pinned back as any Broadway belle, yet they are, and they are the women whose price is above rubies, many of whom now adorn the homes of many men of wealth and refinement."

As this fruit is scattered over such a large surface of country, the mode of gathering and marketing it is peculiar. It is done by a class of men who are called "carters." Previous to the ripening of the fruit, these men provide themselves with a number of boxes which contain either 8 or 16 quarts each, the 16-quart boxes are made without lids, but have a narrow strip across the top in order to prevent one box from dropping into the others, and damaging the fruit; at the same time it answers as a handle to the box. The 8-quart boxes are generally packed in skeleton cases with lids, each case containing either 4 or 6 boxes. When the fruit is sold, these boxes are returned to the shipper to be refilled. In the beginning of this shipping business they made use of an ordinary box containing from 16 quarts to 1½ bushels, and occasionally 3 bushels would be sent in one package, but this system necessitated the measuring of the fruit, which in time created dissatisfaction among the shippers, owing to the shrinkage in the measure reported as sold, from the quantity sent; gradually the present system was introduced, and these two kinds of boxes are now used by all the large shippers in the State. These carters select a portion of the "Pines" which they call their route, they drive through this route and meet the pickers at a named point, and at stated hours, and buy their fruit. This plan is adopted for the convenience of both parties, as it saves time and fatigue to each, yet these pickers are not so isolated that they cannot, or do not learn the prices paid by other carters. When the carter has gone his rounds and gathered his load of fruit, he proceeds with it to the nearest depot, and ships it to market, where it is generally sold by the box, not measured, as that would injure it. Years since, before the railroads penetrated every county of the State, these men had to cart the fruit many miles before they could reach a shipping point, and in

most cases it took them two days and nights to make a trip, as they followed the fruit and received the money for it before they returned home, but now they can make from one to three trips daily. As the telegraph also now connects with the leading stations on the line of their railroads, these carters are enabled to learn daily the prices for which their berries sell, consequently know what they can afford to pay, and if their statement is questioned by the pickers, they have but to produce the telegram to confirm their assertions.

In some instances one or more persons locate themselves at a prominent depot to buy such fruit as may be brought in from sections where there are no carters, or perhaps a picker having several bushels to dispose of, concludes not to sell to the carters, thinking he may get more money for his fruit at the station, which is generally the case, as there is more competition among these buyers. Persons accustomed to go in the woods and pick these berries for home consumption, cannot bear to eat them after they reach the cities on account of their being "mussed."

I know of no more appropriate word for the condition they are in, for they are not mashed. I do not wonder at them, but when we consider the jolting and handling they receive, you will not be surprised. Let me at the close of this article call your attention to these changes, not merely out of curiosity, but to show you why fruit should be handled more carefully by transportation companies, than it is. First, the pickers place them in their baskets, then they are measured, turned out into the boxes of the purchasers, then carted around over roots and stumps, until all are loaded, then to the depot where they are placed in the cars, then on the boat, then on the dock, then on the carts, taken to the store, where they are again placed in wagons to be carted over the stones of the city. These are the least of the handlings they receive, for they are often resbipped to other cities, to undergo another series of changes of like character.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

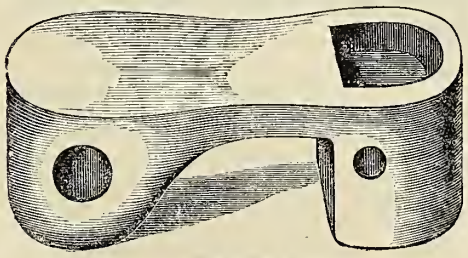
ARTICLE VII.—FALSE INDIGO AND RED CLOVER.

A correspondent, evidently a keen observer, and who thinks that we make too much of cross-fertilization, mentions Red Clover as a self-fertilizing flower, and the blue False Indigo (*Baptisia australis*), as a cross-fertilizer. We have an idea that there is not much difference between them in this respect, but from what is generally understood about Clover, and from what we had seen of the False Indigo, we should have expected our correspondent to put it just the other way. Both belong to the pulse family, the plan of whose flowers and the arrangement for fertilization we propose to illustrate in a later article. Both are like Bleeding Hearts (of Article V), in one particular, namely, in having stamens and pistil shut up together in such a way that the stigma readily gets dusted with pollen from the surrounding stamens. So these flowers may be self-fertilized, but for all that, they are capitally arranged for cross-fertilizing, and actually secure the advantages of that method in a fair proportion of instances. How it is done, our illustrations next month may make clear. When we took our first look at the *Baptisia* blossoms this year, and saw how readily its stigma took pollen from its own stamens, we wondered why our esteemed correspondent hit upon this as a cross-fertilizer, but on inquiring we were told that when the flowers were protected from the bees, the plants set no fruit. Upon our next visit, in a sunny afternoon, we saw the honey-bees at work, and appreciated the admirable arrangement for cross-fertilization through their agency. Alighting on the four petals which stand forward and loosely enclose the pistil and ten stamens, the bee thrusts its head down into the flower between these and the upper or standard petals; its position and weight open and slightly depress the sac, and this brushes the stigma and the anthers against the hairy abdomen of the bee, the hind legs all the while actively moving among the anthers. In this way, passing from flower to flower, it was plain to see how the bees did the work of cross-fertilization.

Now as to red clover, the arrangement is essentially the same as in *Baptisia* and the rest of the pulse family, except that the flowers are crowded in a dense head, the petals are all united below into a prolonged tube, honey-bearing at bottom, and the filaments of the stamens are united. That some pollen reaches the stigma from contiguous anthers, at least when the flowers are jostled, is certain, and some self-fertilization must thus be effected if its own pollen acts. Yet Mr. Darwin found long ago, in England, that while 100 unprotected heads of red clover matured 2,700 seeds, the same number of heads protected from bumble-bees produced not a single seed. And in this country it is generally understood that the first Red Clover crop, which is in blossom before our bumble-bees abound, seeds sparingly, while the second produces seed freely. This is attributed either to the abundance of bumble-bees in the latter part of summer, or partly to the shorter tube of the later flowers, which makes their honey more accessible, and therefore more attractive, to other bees and species of insects. In Germany, according to Herman Müller, other insects than bumble-bees take part in the fertilization of red clover, so that Darwin's well-known chain of causation, which reads like a chapter from "The House that Jack Built," must be taken with some qualification, at least out of England. Concluding that red clover in that country is fertilized only by bumble-bees, he remarks that the number of bumble-bees depends on the number of field mice, which destroy their combs and nests, and that the number of mice depends on the number of cats in the neighborhood, so that an increase in the number of cats which catch the mice, which destroy the nests of the bumble-bees, which fertilize the red-clover blossoms from which they suck honey, might diminish the amount or tend to terminate the existence of red clover in any district. Some one, we believe in New England, added another link to this chain by suggesting that, as the number of cats kept depends on the number of old maids, these worthy members of the community might in certain cases be unwittingly the cause of the failure of the clover crop. But, coming down to sober facts, it is obvious that our early red clover sets a fair quantity of seed before bumble-bees are abundant, and some of this seed is likely to come from self-fertilization. Yet we do not learn that our critical correspondent has tested this, as Mr. Darwin did, by shielding clover-heads from all insects, and noting the result. On the other hand, the fuller fertility later in the season, when the clover-heads are largely visited by bees, goes to show that cross-fertilization takes place and is advantageous, if not absolutely necessary. To show that these flowers and all others of the pulse family, are constructed for crossing by means of flying insects, and that while some may be, others cannot be self-fertilized, will be our task in the next article.

Horticultural Clogs.

Mr. A. Moffett, Iowa, finding that pruning his vineyard, when the ground was covered with wet snow or a slight covering of mud over frozen



A CLOG FOR THE GARDEN.

ground, was conducive to cold feet and consequent discomforts, devised a pair of clogs to overcome the difficulty. The device is shown in the engraving, and consists of blocks of the shape here given, made of any light wood; an excavation is made for the heel of the boot, and two holes are bored for straps, by means of which it can be fastened at the heel and toe. They are made high enough to keep the feet well up out of the snow or mud. Mr. M., instead of running to the patent office with his contrivance, gives it for the benefit of his brother horticulturists. In a large vineyard one can not always wait until the surface is in a condition to allow the pruning to be done with comfort, and we have no doubt that this clog—or as Mr. M. suggests, wooden shoes, would much facilitate operations. Wooden shoes are not to be had everywhere, but any one can make a clog of this kind. Though this is not the season that such an affair is required, we give it now rather than run the risk of having it crowded out at pruning time.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Where shall the Home be?

Of course we shall settle ourselves where there seems a reasonably good chance to obtain the necessaries of life. The place where one can make money fast is not always the place where one can get a good living—since it is very true that "man cannot live by bread alone." To most people, the "necessaries of life" include, besides food, shelter, and raiment, certain social and educational advantages, as good neighbors, congenial friends, nearness to church, school, and post-office. Important as these considerations are in selecting a residence, not less than any, or than all together, is the question of health, since upon health depends the ability to enjoy other blessings. It is unwise to seek a permanent home in any place where there is serious malaria. *Malaria* means bad air, which may be simply *damp* air, so conducive to consumption as well as other diseases. It may be *miasm*, which is air poisoned by floating particles of putrifying animal or vegetable matter, the air of some swamps and undrained low lands—also such air as becomes the private inheritance of many families on account of their ignorance or carelessness. People go thousands of miles in search of pure air, and the change only benefits them until they have had a chance to create about them the same kind of bad air from which they sought to escape. They charged upon the State they left, the blame for diseases which were simply the result of their own disobedience to sanitary laws. Probably there are unhealthy locations in every State, and no one who would have a healthy home should make it in or near a swamp, or on badly drained land.

The building site should be at least level with the surrounding land, and somewhat elevated if possible. It is uncomfortable to mount a steep hill whenever you go home, and a house too much elevated above the surrounding country takes the full force of all storms. But this is better than to have your yard and cellar flooded by rains running from land sloping towards your house. Even the water that pours from your roof may become a nuisance if there is no provision for its escape from the soil close around the house. If it is not treasured up in cisterns, it should easily run away from before the doors and windows. The dirt thrown from the cellar may make a sufficient slope for this purpose. A house set low seems more hospitable than one which is entered by a flight of several steps; but we must remember that the air near the ground is more apt to be damp and unwholesome than that which is higher above the surface of the earth.

If you can choose the situation for your house—if you are looking at various "lots" with a view to purchasing, or if you are studying the comparative advantages of several building sites upon your farm—consider beforehand where you can arrange all outside conveniences so that they may be handy and wholesome. Think, too, of the effects of sun and shade—how to secure plenty of sunshine for winter, and plenty of shade for summer comfort.

In summer time we are always pleased to have our house front the east, so that we can have cooler kitchens in the morning, and sit by the windows and doorways, or in our front yards in the afternoon. I know a beautiful house, with a generous piazza around three sides, but in summer afternoons, when the shade of the piazza is most desired, the sun blazes square upon the west side, and down the full length of both north and south sides. In this case the difficulty can be remedied by a screen of thick vines in front, at each end of the west side, so as to shade the north and south sides. Shade trees also will modify the situation.

Another most important consideration is your water privilege. Pure air alone will not save us

Fig. 1.—DIAGRAM OF CHAIRS AND SEAT.

from disease. We must have pure water and plenty of it. If plenty of soft water can be had by digging for it, you are fortunate. If you have cool spring water close at hand, you are in luck. You can depend upon cisterns of rain water if you live where rains are sufficiently frequent, and if neither you nor your near neighbors keep pigeons. These birds, (often called doves), sometimes soil the roof and eave-troughs to such an extent as to seriously damage the water gathered from the roof. It is a pity to have to depend alone upon cisterns, as these sometimes unexpectedly and most inconveniently fail from lack of rain, or from leaks, or from some pollution. But in a region where there is plenty of water in wells, it may be all hard, and therefore very uncomfortable for bathing and for laundry purposes. In such a case a cistern, though not the sole dependence, is a necessary appendage to the establishment.

One cannot afford to lay the foundations of a home regardless of the surrounding scenery. Beauty of view from the windows and doors is greatly to be desired. Without money and without price you can then have something better than the costliest paintings.

Doing the "Nothing."

"I should be glad to read it," said aunt L., "but I can't get time."—"I should think you might have considerable leisure," I replied, "you have a hired girl to do the work."—"Yes," she answerd, with a laugh, "the hired girl does the work, and I do the *nothing*, but my nothing keeps me as busy as her work keeps her, and is quite as hard."

This saying was beyond my comprehension, for I had then had no experience by which I could interpret it. Now I understand. My aunt had no small children, none too young to be "in business" somewhere. But there were three or four hired

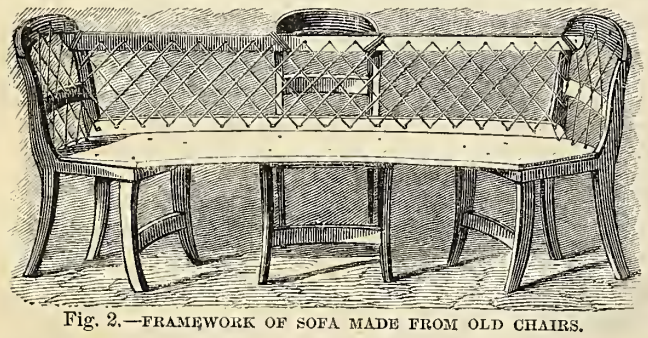


Fig. 2.—FRAMEWORK OF SOFA MADE FROM OLD CHAIRS.

men, and there was company coming and going, and sewing, and knitting, and darning, and the hunting for rags and strings when needed, the putting away of scattered articles, the oversight and direction of the whole in-door establishment.

I remember when I was first left to superintend the family work for a few days during my mother's absence, while I was yet in my teens. I did all that my mother had expected me to do, in the way of housework, and had considerable leisure for my own sewing and reading. I said to my father on the last evening before my mother came home, "I can't see what keeps mother so busy. She keeps step, step, stepping around the kitchen most all day, and here I have done all the work, and read a book through besides." Father laughed, for he knew what I did not think of then, (it was in my early school-ma'am days, when I knew very little about housework,) that I had had none of the big jobs of housekeeping to do, nothing but getting meals and keeping the house in order. When mother came home, her old habits were continued. She was trying out fat that I should have allowed to spoil, had she stayed longer away; jars of preserves were made or sealed over, feather beds were turned out to air, straw ticks emptied and washed and refilled, old chests of useful rubbish assorted, odd corners swept and dusted, and no end of tasks, both little and big, in addition to the regular daily and weekly work, which included those inevitable jobs of washing, ironing, baking, and scrubbing, which had not devolved upon me during her absence, and but little previously, as elder sisters took the brunt of the housework.

But I know now what it is to do the "nothing" for a family—know it so well that it seems to me that the task is too much for the farmer's wife of average health, who has three or four young children. Day before yesterday our stove was moved out of our sitting-room, and another one moved in, with some necessary change of pipe. It was a busy time of year, (June,) and I had put off the dirty and disagreeable task as long as possible. The work took longer and was more difficult than I had expected, and my sympathies were taxed a good deal for the "master of the house" who was hindered and wearied by it all—the more so, perhaps, because he entered upon it bravely, and endured it cheerfully. Afterwards he spoke of "wrestling with a stove-pipe" as very nerve-trying business—pipes are so hard to fit together or to pull apart, and slipping just when and where you least expected or desired them to. I said that I always felt great sympathy for men who had such work to do, but I thought how much it was in some respects like my own daily work.

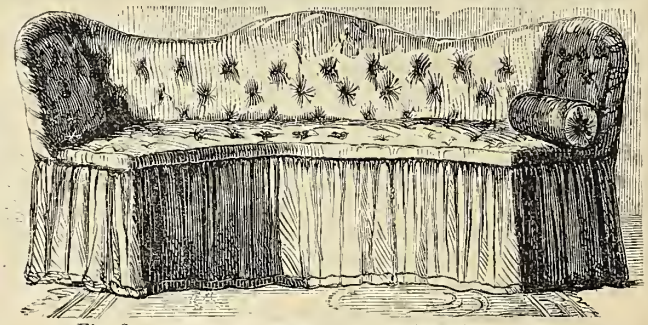


Fig. 3.—SOFA MADE FROM OLD CHAIRS—COMPLETED.

To-day I have been unusually tired, perhaps, by the amount of "nothing" I have performed—work which has no name, and does not seem to count. I have done no cooking or cleaning, or other *regular* work, but at ten o'clock I was so tired that I thought I would like to rest all day. Why do children lose their hats and misplace their shoes? Why do two-year-old babies make themselves so busy in putting things out of place, spilling their bread and milk, and meddling with your papers? Why cannot children who are elated with the prospect of a pleasant excursion, bear their joy with dignified composure? You may try to be calm and patient, and succeed as well as usual, in getting two children ready for a boat-ride across the lake and a trip of a mile or two on foot, to the "new store," but the business will prove tiresome to the average woman. They are very happy, but happiness quickens the activity of a boy's limbs and tongue to quite an unnecessary degree, and he can hardly hold still to have his hair parted or his collar buttoned. A little girl waits for you to sew a ruffle in her new frock, and baby clings to you, calling, "I want to go 'way off too. I want to go too. Wash my face. Take me. Take me"—and every other request by which he hopes to get numbered with the party going "way off." Another child got up late, and has not had enough breakfast, and wants you to tie her shoes, as she tells you every two minutes. You have a list of purchases to make out for your little errand boy to take with him, and letters to sign and seal and address for him to mail,—and baby has the portmonnaie which is one of his big brother's greatest treasures, and one that he likes an opportunity to use. You take the portmonnaie away from baby, and put it so securely beyond reach that, after a quarter of an hour's vigorous search by yourself and children, it cannot be found, and your own pocket-book must go instead. The baby has been examining your letters, and did he take anything out or exchange the contents of the unsealed envelopes? All this time you have not decided what the hired girl shall get for dinner, and you know that as soon as she has the morning work done up, she will ask what she shall do now, as it is Thursday, with no regular filling in between breakfast and dinner work. You must take time to consider whether she had better rip up that mattress and wash the hair to-day. The children want a basin to bail out the boat, and the sun shines so hot you hunt up a big parasol for your little girl with the turned up hat-brim, and promise her two cents when she gets home if she brings the old parasol back safe. You follow them to the lake to make a change in the boy's clothing, it is coming off so much warmer than you expected. Then you go back and send the hired girl down with a flour sack in which the various packages are to be put, and slung over the boy's shoulder on his homeward way. At last you are ready to tie four-year-old's shoes, but it is now so warm that she can go barefoot. "Take me, take me," pleads the big baby, who waked earlier than usual this morning, and got up before he was sufficiently awake. As soon as you take him he wants a cup of milk, and when you have "byed" him almost to sleep, in rushes Four-year-old with such a lively story about the hens she has been feeding, that your work for baby is all undone. And so it goes. Such was my experience to-day, with the added anxiety of knowing that it was "now or never" with "Home Topics" for this month. While I got very tired with doing my "nothing," the hired girl was doing the work which can be done with little exercise of mind and nerve—dish-washing, sweeping, bed-making. Still, I did not envy her, nor do I ever envy the childless women, but I want it more generally understood and appreciated that *mothers who take care of their own children have work enough to employ their time and nervous force, if they have no other work depending upon them.* Observe the word "*depending*," for they may be able and glad to do more. Only the ill-informed or cruelly-disposed will sneer at the feeble health or "nervousness" of women, so long as they are so unmercifully "weighted" in the performance of duties peculiar to their sex, (as, for instance, the nurture of young children), by cares and labors which do not rightly belong to one sex more than another. No subject is more important than the domestic problem—how to promote happy homes for human beings, homes which are comfortable for all the members. Many suppose that money is the great thing needful, but wealth alone will not solve the problem—will not ensure a housekeeper suitable help in her duties, or give a mother the necessary command of time and resources for such primary education of her children as the age seems to demand. Greater simplicity in dress and house appointments, and manner of living, would considerably mitigate the lot of most women. But the hardest-pushed among us cannot serve our race and our Maker better than to make the best of our situation, and endure present trials patiently, while we speak honestly what seems Truth to us, and wait for light and leading from above.

A Cook Recipe, with Variations.

In Marion Harland's book we find the following:

"*Baked Hominy.*—To a cupful of cold boiled hominy, (small kind), allow two cups of milk, a heaping teaspoonful of butter, a teaspoonful of white sugar, a little salt, and three eggs. Beat the eggs very light, yolks and whites separately. Work the yolks first into the hominy, alternately with the butter. When thoroughly mixed, put in sugar and salt, and go on beating while you soften the batter gradually with the milk. Be careful to leave no lumps in the hominy. Lastly stir in the whites, and bake in a buttered pudding-dish until light, firm, and delicately browned. May be eaten as a desert, but it is a delightful vegetable, and the best substitute that can be devised for green corn pudding."

This is indeed a "delightful vegetable," prepared exactly as the author directs, but you don't often have the cold hominy, perhaps, or you cannot always spare eggs in the prescribed proportion. Baked hominy has become one of our most common dinner dishes, but it is seldom real hominy that goes in. Oatmeal mush, graniola, cracked wheat, cold boiled rice—any of those rather coarse farinaceous preparations, even good corn-meal pudding—all serve well in this recipe instead of hominy. Cracked wheat is preferred to hominy by some at our table. If you leave out the butter no one will miss it, and if two or three times the amount of hominy or mush goes with the "three eggs," and somewhat more than "two cups" of milk, it is still an excellent dish. The exact recipe makes it a sort of hominy custard in appearance, but it is still an excellent pudding with a smaller proportion of eggs. Of course it could be baked without any eggs, (as good rice puddings are), using more mush and less milk in proportion, so you can make it rich or plain, as suits your convenience. If you use a cupful of sugar with nutmeg or cinnamon, what have you but a good, baked, sweet pudding?

Home-made Furniture.—A Sofa from Old Chairs.

We are indebted to the lady whose design for extending a bureau we published two months ago, for the idea of constructing a sofa from three old chairs. The manner of doing this is so plainly shown in the engravings that but little description is required. The manner of placing the chairs, and the shape of the plank which is to connect them and form the seat, are shown in the diagram, figure 1. The plank is to be firmly fastened to the chairs with a sufficient number of long and strong screws; the front edge of the plank should be worked out in the form shown in the diagram. To make the back of the sofa, two strips (spruce will answer), ¾ inch thick and 2½ inches wide, are required; these have holes bored near one edge, about 3 in. apart, and one is screwed, lashed, or otherwise fastened near the seats, and the other near the tops of the chairs. Strong twine is then run through the holes in these slats, to form a net-work, as shown in figure 2; this should be pulled very tight, and may be kept so by driving a plug into a hole here and there, to jam hard against the twine. The frame-work may be made in this way at a very little expense; the cushions may be made to cost more or less, according to the material used in stuffing them, and the covering. The finished sofa is represented in figure 3. See engravings on p. 304.

Ginger Snaps.—By Mrs. C. B., Homer, Wis. Butter and sugar 1 cup each, rub together; add boiling molasses 1 pint, saleratus ½ teaspoonful, ginger one tablespoonful. Other spices to taste; flour enough to make it stiff. Let stand until cold, roll thin, cut out and bake quickly. Then spread them in a colander or sieve, and stand for a while in a warm place, to make them crisp.... Another.—Mrs. "G. L. J.," who omits her address, says: Flour 2 lbs., butter ¼ lb., sugar ¼ lb.; ginger 1 tablespoonful; cinnamon 1 teaspoonful; soda ½ teaspoonful. Molasses a sufficient quantity. Rub the butter with the sugar and other ingredients, and mix with as much molasses as will make a stiff dough; knead well, roll into very thin sheets, cut with a round cutter, place on slightly buttered pans, and bake in a quick oven. Keep in a covered jar in a dry place.

Mould in Canned Fruit.—"M. L. W.," Boston, finds that mould appears on the top of some of the canned fruit, wishes to know the cause, and how it may be prevented another season. The *cause* of mould is the same as the "cause" of a pumpkin vine. In the case of the vine we plant a large germ or seed that we can see, and we can understand why the vine appears. Mould is just as much a plant as the vine, but the germs, or what serves as seeds, are so small that they can plant themselves without our seeing them; they may be carried in the air, or they may have been with the fruit, which was not sufficiently cooked to kill them. We have never known mould in fruit jars to do any injury; it does not indicate that fermentation has taken place; and if carefully removed, the contents of the jar are in good condition. As to prevention, we would suggest filling up the jars so as to have as little air space as possible, and covering as quickly as may be, in order that the surface may not be exposed to the air any longer than necessary. The occurence of mould in some jars, and not in others, would show that a difference in handling them had something to do with it.

Moths in Carpets.—Mrs. "S. T. W." has tried salt and various other applications, and still the insects trouble her carpets. We advise her to try the plan proposed by Prof. A. J. Cook, in his report on Injurious Insects. He advises to take a wet sheet or other cloth, lay it upon the carpet, and then go over the wet cloth with a hot flat iron; the steam thus produced will penetrate the carpet, and not only destroy living moths, but cook their eggs, and prevent them from hatching. It is cheap and easy of application, and we have no doubt that it will prove effective. The only wonder is, that no one has thought of it before.

No. 454. Puzzle Picture.—The artist says that this represents Indians viewing the face of the country. The Indians are plain enough; the face of the country is much diversified, but very striking when you see it.

BOYS & GIRLS' COLUMNS.

John Gilpin's Ride Illustrated.

"Who was John Gilpin?" you will no doubt ask, and "Where did he ride?"—Probably the history of no one was better known to your grandparents, if not to your parents, and the boys and girls of 50 years ago could repeat the whole of his "Diverting History," which was written in amusing verse by the poet Cowper, though most of his writings were serious and sad. We are told that "John Gilpin was a citizen of credit and renown," his "renown" is to be still greater, for though his history is preserved in Cowper's poem, he is now to be still more famous by having his wonderful ride illustrated by thousands of boys and girls all over this country, and no doubt in other countries. Mr. Crandall, who is always contriving some clever toy, has now taken John Gilpin in hand on this Centennial year. There are John and his horse, and as you read the poem you can put the two in position to illustrate the ride. The Publishers tell all about it on 3d cover page. The poet concludes the history by saying, "And when he next doth ride abroad, may I be there to see."—Unfortunately Cowper did not live in our day, or he could have seen Gilpin taking rides the like of which his poet's fancy never conceived. Who but Crandall would ever have thought of illustrating Cowper, and making fun for boys and girls at the same time?

How Kitty Went Blackberrying.

BY LILA P. NORTH.

"Div me more! Div me more, Susie!" cried Kitty, holding open her little mouth, all purple with blackberry juice.

"Oh, Kitty! I can't find any more; the boys have eaten them all off these bushes. Besides, there's the dinner bell, we must go back to the house," said Susie, taking her little sister's hand, and starting down the hill.

Now Kitty loved blackberries dearly, and was dreadfully disappointed that Susie had not found more among the bushes by the old stone wall, and her little heart was so full of grief that some of it ran out of her eyes, as she stumbled over the grass, sobbing out, "Oh, Susie! you're a drefful, drefful bad dirl; you said yon'd det me lots and lots, now I tan't love you any more, Susie!"

"What's the matter with my little Kitty?" asked Mr. Riley, coming out from the back porch, where he had been trying to wash the red from his hot face.

"Why, father, she's crying because I didn't get her but a few blackberries by the old stone fence, and I found all I could, father!" cried Susie, indignantly.

No. 455. A Patriotic Rebus, which gives the name of something dear to all Americans, as a place celebrated in our revolutionary history.

"My little girl you must not cry," said Mr. Riley, as he lifted Kitty into her high chair at the dinner-table, "I know where there are plenty of blackberries up in the wood-lot, and you and Susie can go there after dinner."

Kitty's sunshiny smile at this dried all the tears in her brown eyes in a minute, and when dinner was over, she and Susie, with each a basket, set off for the wood-lot. There was the corn field to pass through first, and that was hard walking for Kitty's little four-year-old feet, and then they came to the rye field, where the rye stood high above her head, then the turnip field, and last of all, the wood-lot, with its hickory and butternut trees, the brook down in the bottom, and the cave which Susie used to think must have a bear in it, when she was as small as Kitty. But Susie was ten years old now, and knew there were no bears anywhere near except in cages. All along the fence and in the edge of the woods, were the bushes, and "lots and lots" of berries, and now Kitty did not need any one to feed her, her own little hands could keep her mouth busy. It was only when she could eat no more that she began to think how hot and tired she was, and how her little basket had not one blackberry in it yet.

"I dess you can det *my* bakset full too," she called to Susie, who was busily picking.

"Let me see," said Susie, coming up. "Why you lazy little thing, you haven't got any. I wish I hadn't brought you."

"I want to do home," announced Kitty, abruptly.

"Well, you can go alone, I've got to pick berries," said her sister, beginning work again. Kitty stood swinging her sun-bonnet and shaking her curls indignantly for a while, and then walked off.

"I'll dit lost, and fighten bad Susie," she thought in her naughty little heart. The wood-lot was very large, covered with little hollows and groups of trees—besides the great wood where the brook ran. Kitty was soon lost to sight behind one of these clumps of trees, and when after some time, Susie looked up from her work, she could see nothing of her. She went to the bars and looked through the fields toward the house. Nothing was seen of Kitty, and supposing she had really gone home, Susie went back, filled her own basket, and Kitty's too, and then started home. On her way through the turnip-field she spied her father and the men making the new pond in Mr. Wheeler's farm, and Susie resolved to go over and look on. So she crossed the fields, and setting the berries under a tree, soon forgot everything else in watching them letting on the water. It was half-past six before the men were through. Susie and her father went home together. "Where's Kitty," he asked, as they walked along.—"Oh! she got tired and went home long ago," said Susie. When they reached the house Mrs. Riley came out to meet them. "How long you have been gone, Susie!" she said. "Where's Kitty?"

"Why—she came home hours ago," cried Susie, in surprise. "She wouldn't pick berries."—"Oh! James, the child is lost," exclaimed Mrs. Riley, in alarm, "how could you let her come alone, Susie?

Poor Susie did not know what to say, she had not thought of any danger to Kitty, and when she saw her father and Sam, the hired man, start up through the fields to look for her little sister, she felt as if she must go too. But her mother would not let her go. It seemed as though a week had passed by, to Susie and her mother, when at last, when it was nearly eight o'clock, they saw Mr. Riley and Sam coming down the hill, and yes! Mr. Riley carried Kitty in his arms. The tired little girl was fast asleep, and her mother wept tears of joy as she took her in her arms and kissed the little stained face again and again. The kisses woke Kitty from her nap, which she had been taking for hours away down in the woods. "What's this tied up in your apron?" said her mother.—"It's some berries for you, mamma, I dot 'em all myself, tanse the bakset was so big." There in a corner of the little apron was a mass of berries, mashed and squeezed until the juice had run way down to Kitty's feet, but Mrs. Riley thanked her all the same, not for the blackberries, but for the love which went with them. But Kitty thought it was for the blackberries.

Aunt Sue's Puzzle-Box.

DOUBLE ACROSTIC.

Primals and finals each will name
A very pretty flower,
The first grows wild in field or lane,
The last, by garden bower.
1—First name a gentle lady,
2—And then a gentleman,
3—And now a place of ingress,
4—And now a mighty plain:
5—And then please take a pronoun,
Be sure it isn't "ours,"
And straightway get the titles
Of the two pretty flowers. Italian Boy.

CONCEALED SQUARE WORD.

I have seen actions which appeared noble, but were open to objection. I treasure in my heart, nevertheless, many a kindness done for me, although at last made conscious that the motive was a crafty one. On the contrary, a good deed may be done in an unfortunate style, so do not judge by appearances. Xipp.

TRANSPOSITIONS.

(Fill the four following blanks with the same word variously transposed.)

How —— the gentle ——
As they browse beside the stream.
How savory the ——
Which my —— and I did eat. Bessie Bennett.

NUMERICAL ENIGMAS.

1. I am composed of 14 letters:
My 14, 8, 4, 5, 9, is a number.
My 2, 12, 13, 6, is a metal.
My 3, 11, 5, 6, is a boy's nickname.
My 7, 1, 10, is a game with which all children are familiar.
My whole is the name and title of one of the kings of England. E. M. Lillibridge.

2. I am composed of 11 letters:
My 3, 2, 1, 4, 7, 5, is used in making picture frames.
My 6, 5, 8, 9, 10, 11, is part of a harness.
My whole is a good maxim. W. E. H.

DECAPITATIONS.

1. Behead a European city, and leave "above."
2. Behead an Asiatic city, and leave a home of wild beasts.
3. Behead an animal, and leave part of the body.
4. Behead part of a wagon, and leave part of the body.
5. Behead a fish, and leave an animal. Isola.

NAMES OF POETS.

1. A river in Italy. 2. One of the tribes of Israel and a beverage. 3. Part of a dollar and the prevailing fashion. 4. Not old. 5. Very rapid. M. P.

PUZZLE.

With part of a pill, a hit of mud, a taste of candy, and a portion of wine and of gin, make something nice to eat. Snip.

HIDDEN FLOWERS.

1. In grammar, the verb enables us to give expression to words. 2. We all know, Ida, Don is a Spanish title; also the name of a river in Russia. 3. There is the church with its glittering spire, and fine architecture. 4. In China, Eli, "lys" is a measure equal to 533 yards. 5. Do not detain me, Levi, O! let me go. Sphinx.

No. 456. A Geographical Rebus.—You will find here 18 places, including cities, countries, islands, and other localities that those who have studied geography should know all about.

PI.

A shore tib shi stream,
Who mace ti ot saps?
Eh dreah het dogo norsap yas
"Lal shelf si sargs." C. A. Sproat.

DIAMOND PUZZLE.

1. Part of a sofa. 2. A texture made of sedge, straw, or other material. 3. A miserable person. 4. A tyrant. 5. Tinge. 6. To bring to corruption. 7. May be seen in the moon. Xeryion.

CROSS WORD.

My first is in teacher but not in school,
My next is in horse but not in mule,
My third is in hog but not in pen,
My fourth is in pullet but not in hen,
My fifth is in stop but not in balk,
My sixth is in crow but not in hawk,
My seventh is in spruce but not in yew,
My eighth is in green but not in blue,
And now if one or two guesses you'll give
You perhaps can tell the place where I live. W. M. I.

ANAGRAMS.

1. Do send cab.
2. I ate lobster.
3. Saphire cornet.
4. O nice base.
5. A dirty 'bus.
6. Soil on a tub.
7. Dry eat's table.
8. Hit clean cities.
9. Made tin coil.
10. See Mag's slab.

ANSWERS TO PUZZLES IN THE JUNE NUMBER.

Beheaded Rhymes.—1. Sled, led, Ed. 2. Sprat, Prat, rat. 3. Strip, trip, rip. 4. Shark, hark, ark. 5. Plate, late, ate. 6. Scold, cold, old. 7. Smart, mart, art. 8. Scream, cream, ream.

Numerical Enigma.—Shakspeare.

Cross Word.—William Cullen Bryant,

Pi.—If every pain and care we feel
Were written on the brow,
How many a hand would pause to heal,
That only wounds us now.

Acrostical Arithmorem.

Madrid, Thames.

M— alle —T
A— mbus —H
D— at —A
R— oa —M
I —mmens—E
D— ome —S

Diamond Puzzle.

Happiness.

H
H A T
R E P E L
T R A P P E D
H A P P I N E S S
P E N N I E S
T H E M E
A S S
S

Anagrams of very Ancient Cities.

1. Hecatompylos.
2. Ceeropia (Athens).
3. Persepolis.
4. Orontem (once Antioch).
5. Ninus (the Nineveh of the Bible).
6. Carthage.

Answers to 452.

1. Fall—*all.*
2. Wheel—*heel.*
3. Bend (of the river)—*end.*
4. Mill—*ill.*
5. Cloud—*loud.*
6. Boat—*oat.*
7. Flag—*lag.*
8. Bridge—*ridge.*
9. Boat—*boa.*
10. Bend—*Ben.*
11. River—*rive.*
12. Barrow—*arrow.*

Thanks, for puzzles, letters, etc., to Robert J. D., Annie F., A. B. S., J. A. M. (what *is* "Santiegar"?) A. M. B., F., Niel Lee, Sadie E., C. W. St., Jennie Van A., May, L. M., L. H. R., and Charlie.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

Aunt Sue's Chats.

M. J. D.—A very pretty "toy for the baby" may be made with three knitted balls attached to a rubber teething-ring by cords. Set up about 20 stitches on a steel needle, say of blue worsted. Knit about 20 rows of plain knitting; then join on some red worsted, and knit 20 rows of that; then finish it off. Join the ends together; gather one side, and fasten it (sew it together). Stuff it

Fig. 1.—BALL.

Fig. 2.—BALL.

with raw cotton; then gather the other side, and fasten that off (having first fastened in a cord, made of colored worsted, to hang it up by; let the cord be three fingers long, and fasten the other end of the cord into the next ball you make). Now, with some white worsted (and a worsted needle) work a star (see fig. 1) from the center of the ball around the cord, three stitches (of "single zephyr") in each point. On the sides of the ball work four stars (fig. 2). Where the blue worsted joins the red, work a black star (one stitch in each point), and a little round spot of yellow worsted in the center. In the center of the red side, work a blue star with yellow center, and in the center of the blue side, a red star with yellow center. Now fasten a little toy sleigh-bell at the bottom of the ball (as seen in fig. 2), and one ball is completed. Of course you can select your own colors, but I have been particular to describe the foregoing, as a set of balls now hangs near me so exceedingly pretty, that I should copy it exactly. The other two balls are pink and green (with a green star in the pink worsted, and a pink one in the green; a black star where the two colors join), and black and yellow; the latter worked with red and white stars. Now fasten the balls to the rubber-ring, letting them hang in different lengths, as in figure 3, and the baby will be delighted with the effect.

Fig. 3.—TOY.

FREDDIE wants me to suggest "a name for his dog" (a "puppy"). I can give you a few names which occur to me, Freddie, and you can take your choice; but I should not like to take the responsibility of naming him myself. In our own family we have had dogs named Snap, Duke, Billie, Jack, Bang, Peggie, Dot, Pinkie, Nellie, and Ned. Then there are Dash, Rover, Carlo, Sport, Snip, Jip, Tot, Major, Don, Boz, Wolf, Hector, Nero, Cæsar, Crab, Nemo, Lion, Bounce, Dick, Prince, Leo, and lots of others, not forgetting "Schneider."

HELEN F. W. wants to know "why hypocritical tears are called 'crocodile tears.'" As long ago as the time of Herodotus (four hundred years before Christ) there existed a fabulous legend as to the crocodile's ability to snare unwary travelers by certain cries, and that it also shed tears. Shakespeare refers to the cries when he says

——"as the mournful crocodile
with sorrow snares relenting passengers."

And of the tears of "this most deceitful of animals," an old writer (1616) says—"It is written that he will weepe over a man's head when he hath devoured the body, and will then eat up the head too. Wherefore crocodiles teares signifie such teares as are feigned and spent only with intent to deceive or do harm."

MAY.—To "transfer initials" or other embroidery from muslin or cambric, you must cut it from the original fabric, leaving no margin. Then baste it upon the material to which you wish to transfer it, and hem it around all the edges, very neatly, with a fine needle and thread.

FANNIE CLARK (to whom we are much obliged) suggests something better than the fine tooth-comb for spatter-work. She says: "I have had pretty good success in making spatter-work, and I use a sieve; any little wire or tin sieve will do. Hold it over your work and rub the brush across it gently. It makes the spatters much finer. Every one who has tried this way likes it much the best."

L. J. S. asks how to press and preserve ferns. Make books of your old newspapers, by doubling them, pinning them at the back, and then cutting the edges, leaving them about the size of the *American Agriculturist*. Don't pick the ferns and bring them home to your "books," but take the books to them, and place each fern as soon as it is plucked between the leaves of the book. Examine them daily for a week or ten days after gathering, and each time that you look at a fern, take it from its old place and put it in a new dry one. An old music-book is very nice for the purpose. The oftener you change the ferns to dry places in the books, the better they will keep. Place them under a moderate weight all the time they are drying; a couple of flat-irons would be enough for one music-book. Two or three months after gathering the ferns, you can wax them if you choose. To do this, you will need a piece of white wax. Put a folded newspaper on your ironing table, and place your fern upon it; rub a warm (not hot) flat-iron with the wax, pass the iron quickly all over the fern on one side, then turn it and iron the other side. Experience will teach you how much wax to use.

GERTIE L. B. asks me to tell her how the word "slang" originated. An old work, called "A New Dictionary of Sportsman's Slang, etc.," derives it from *slang*, which is the old word for which we now use *sling*. ....*Slangs* were the irons worn by prisoners, and so called from their being *slung*, or suspended by a cord, from the waist, to enable the wearer to move about. The *irons* were the *slangs*; the wearer's language was naturally "slangy," *i. e.*, partaking of the nature of their condition—convicts in *slangs*. Hence, at length came the noun *slang*....A more fanciful account, but I think less likely to be the correct one, says that "slang" comes from an old Dutch General, *Slangerberg*, who commanded some English, or allied Dutch troops under Queen Anne, and who was notorious for his use of bad words, especially when speaking of the Duke of Marlborough, for which he was afterward removed from command. J. Van Lennep, a well-known Dutch writer, agrees with this and thinks Slangenberg was known as "Old Slang," and hence the present word for low language; he says the sailors in the Dutch navy, even now say of a soldier "Let is een *slang*," (a soldier); just as London boys say of one of their "red-coated" soldiers, "there goes a lobster." So, little Gertie, you can take your choice of these accounts. If any one can give us more certain information, we shall be glad to get it.

THANKS for letters, puzzles, etc., to Beatrice, Mrs. M., E. C. G., (I will endeavor to send you a catalogue from which you can select patterns), F. S. W., Charlie, T. Tray, Libbie, and Mary A. E.

To those correspondents who say "please let me know if my answers are correct," I would say, that, even if they had the courtesy to enclose a postage stamp for the reply, I should not have time to answer each one personally, and that if they wait until the answers are published, they will be able to judge for themselves.

To those who ask agricultural questions, and address me as "Dear Sir," I would state that I am not a "Sir," and cannot give instruction on "grafting-wax," or kindred subjects. Such questions should go to the editors.

The Doctor's Talks—About Iron and Steel.

Here comes from Alabama a question from "one of the boys," "W. F. H.," for which he wishes an answer in our "next." It is very rarely that an answer can come in the "next," as that paper is usually being printed at the time such requests come. All such questions are welcome, but I must take my own time about answering them. But I haven't yet stated the question, which is: "What is the difference between Wrought and Cast Iron, and as I am one of the boys, I want to know the difference between Iron and Steel."—A very sensible question, and sensibly put, and I like to know that the boys take an interest in these common things of every day use. Many people are content to know that iron is good for some uses, and steel for others, but never think to ask what is the difference. It is very difficult to answer this question in such a way that young people will understand it. If my young friends knew just a little about chemistry, I could give them a very short and clear answer, but unfortunately that is something that not many old people understand, and we can't expect that youngsters will know much about it. Iron is an element.—Now I have to stop just here, and explain that an element is a substance, that no one has ever been able to separate into two or more substances. Salt is not an element, for it can be broken up into a greenish suffocating gas (*chlorine*), and a metal as bright as silver (*sodium*). Water is not an element, for that is easily split up into two gases, *hydrogen* and *oxygen*, and so with most of the things which surround us; they are mainly made up of other things. But no one has yet been able to show that chlorine or sodium, oxygen or hydrogen, can be divided up into any other substances, so these are called simple bodies, or elements. Thus far 63 of these elements have been discovered, many of which are very rare. Every substance about us, everything that we see, feel, or use in any way—all matter—is made up of one or more of these 63 elements. Iron—*pure iron*—is one of these elements, and you may be sure a very important one, but before I can go on with the story about that, there is another thing that I must tell you. I have already hinted that these elements united with one another—mind I don't say that they mix, but they come together and form a substance quite different from either by itself. Two or more elements may combine, but we will now talk about only two. Take the case of common salt already mentioned. It is hard and brittle, and when pure as clear as glass, but as you see it, it is dead white, just as pounded ice is dead white; then salt is pleasant to the taste, and instead of being injurious, is healthful; when put into the fire, it will not burn. Now you must take my word for it that this very common article, which we daily use, is made up of two elements, chlorine, a green gas that would shortly kill you should you breathe it, and a silver white metal, almost as soft as tallow, and if you were to drop a piece of it into hot water, it would take fire and burn with a bright yellow flame. You see from this that the compound—salt—is very different from its elements, chlorine and sodium. So with water, the liquid we know so well, its two elements are only known as gases, one of which, hydrogen, burns the moment it is touched by a light, and the other, oxygen, is quite unlike that, and both as different from water as can well be. Now one more example of this fact, that the compound is unlike the elements that are in it. You wish for some nails, and can not find the nail-box; after a while you remember that you left the box where you were mending the chicken house, or dog kennel, a few days ago. You go for the neglected nails, and find them covered with a brownish powder, which comes off upon your fingers as you handle them. You say that the nails have rusted; but what is this rust? It is not something that has fallen upon the nails; it is the iron itself, with something else. The iron is one element, and it has united with another element, oxygen, of which there is a great abundance in the air, and in the water which fell as dew upon the nails. But how unlike is the rust to the iron of the nails, and just as unlike the oxygen, an invisible gas. You have no doubt found a piece of iron that has been buried for a long time, that was so rusted that the rust would break off in brittle scales. Rust being iron and oxygen, is called oxide of iron. This oxide of iron is found in great quantities in some places, and is one of the valuable ores from which iron is made. It is not then called iron rust, but that is what it really is—oxygen and iron—but it is found of different colors, and some much harder than others, and while some are exactly like iron rust, others are mixed with other elements. Now, to talk about iron, we have got down to the starting point—iron ore. No doubt some of you have seen some kinds of iron-stone, as it is often called; one of the best kinds is dark brown, but when scratched with a file shows a yellowish brown powder, much like rust; it is brittle, and as unlike iron as any other stone, though it contains more than half its weight of pure iron. In this form of oxide of iron, or rust, iron is found almost everywhere; it is in the soil, and in plants, and is also found in our bodies. But iron is not always found united with oxygen; a common mineral, which is iron and sulphur together, has a shining appearance, and is yellow. So many people have supposed it to be gold, that it is known as "Fool's Gold." In these and other forms iron is found abundantly, all over the world, but though these contain iron, they are not iron in the useful state, such as we know in the many household articles, farm implements, and the hundreds of other uses to which it is put. Iron separated from other substances, is metallic iron; when it is united with other elements, such as oxygen, sulphur and others, it is an iron mineral, which, when abundant enough to yield much iron, is called an iron ore. Iron in the metallic state, *i. e.*, so pure that it may be used, is exceedingly rare, in nature, even much more so than gold. Large masses of it have been found which have fallen to the earth. You have no doubt read of meteorites, which are sometimes seen to rush through the air like a shooting star, and to strike the earth. Some of these meteorites are nearly pure iron; I once saw in a blacksmith's shop in Mexico, one of these meteorites in use as an anvil, and there are others in Mexico and South America much larger. But iron in this form is very rare, and the first that was used had to be obtained from some iron

CHILDREN EATING MACCARONI IN THE STREETS OF NAPLES.

stone or ore. The operation of separating metals from their ores is called reducing. This iron-stone that I first mentioned, the oxide of iron, is the most easily reduced of all. Here in this ore you have iron and oxygen, and to get the iron by itself, we must get rid of the oxygen; to do this we must present to the oxygen something that, so to speak, it likes better than it does the iron. To reduce this ore, we must take the oxygen away, and this is done by offering it carbon; at a high heat the oxygen will unite with the carbon, to form carbonic acid, an invisible gas, and the iron being left to itself will melt and run. You will ask how the carbon is to be got. Charcoal is nearly pure carbon, and wood and mineral coal consist largely of the element, carbon. Iron was known in early times, and the history of its introduction is lost. There is a tradition that some 1500 years B. C., the burning of a forest reduced the iron that was in the iron stones there, and thus gave the hint for the first iron manufacture. Iron is procured in India at the present day by a very rude process. A rough furnace is made of clay and filled with broken iron-stone, and charcoal; the fire being lighted, a blast of air from a rude bellows, made of skins, is forced in at the bottom of the furnace; when the coal is all burned out, the clay furnace is broken, and a lump of iron weighing a few pounds, is obtained. Our iron furnaces are tall iron cylinders lined with fire brick, into the bottom of which passes a powerful blast of air forced by a steam engine; the iron ore and stone-coal are put in at the top of the furnace, and at the proper times the melted iron is drawn off below, allowed to run into molds or troughs of sand, where it cools. The iron ore and coal are added as often as needed, and the work goes on day and night, month after month, without letting the fire go down. The iron as it runs from these furnaces is cast iron. It has taken so long to tell you how iron is first obtained, that I must wait until another month before I can describe the difference between the different kinds of iron, and between these and steel.

THE DOCTOR.

The Maccaroni Eaters.

In warm countries the people live much more out of doors than we do, and their food is much simpler than ours. In these countries people live largely upon fruit, using it as food, and not as we do, as a luxury. The poorer people in such countries rarely get meat, and seem to do quite well without it. In Mexico, where railroads and telegraphs are almost unknown, and stage coaches are rare, the mail, when it goes at all, is carried on horseback, and if one wishes to send a special message, he must employ a runner, or *correro*. These men, with only a shirt and pantaloons of cotton cloth, and leather sandals on their feet, travel for several days on a sort of jog trot, and carry their food with them. All that they take is a small bag of *pinole* and a gourd-shell for a cup. Pinole is made of Indian corn roasted and ground into a meal; this is mixed with some sugar and a little spice. When the runner finds water he can make a meal. He has only to stir enough pinole with water in his gourd-shell cup, to make a gruel; this he drinks, and his dinner is done. These runners do fatigning work with no other food. In Mexico, the working people live largely upon corn in one shape or another, just as they do upon rice in China and other parts of the East. In Italy the food of the common people is Maccaroni. This is a paste made of flour and water, and dried in various forms. The wheat raised in that country has less starch than ours, and makes a very tough paste. By means of a machine, the paste is formed into quill-like pieces, like large pipe-stems, or it is sometimes merely rolled out thin, cut into strips and dried. This, when boiled, is in the shape of tough white strings, and is a very wholesome food. The Maccaroni sellers are to be found at almost every turn in Naples and other cities of Italy, and the poorer people live almost entirely upon Maccaroni and fruit. The engraving shows the manner in which it is eaten; the two street urchins are evidently enjoying it.

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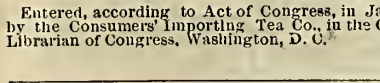

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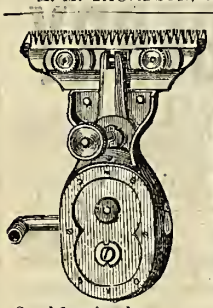

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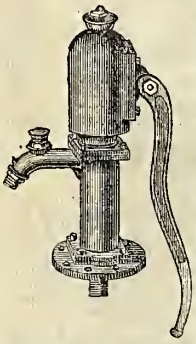

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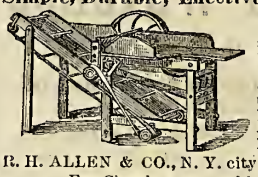

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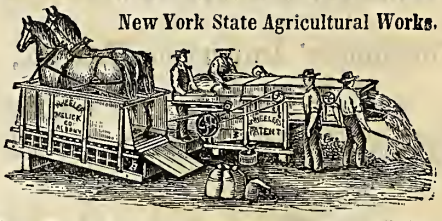

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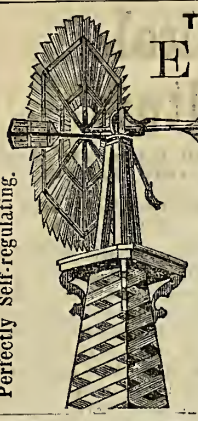

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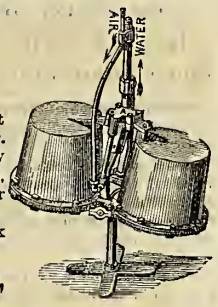

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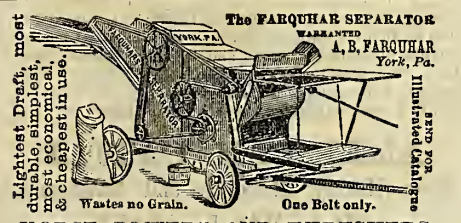

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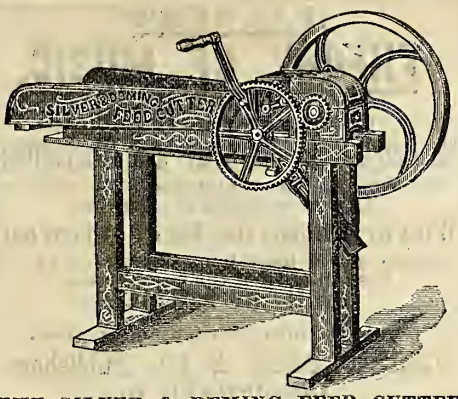

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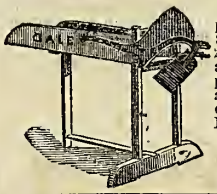

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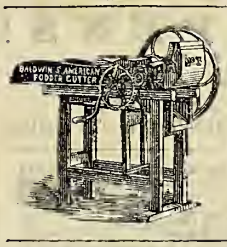

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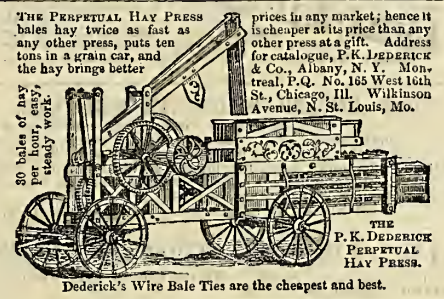

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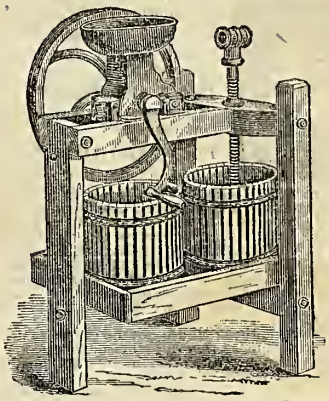

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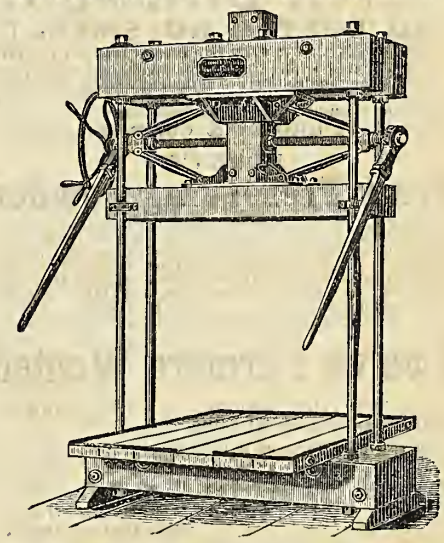

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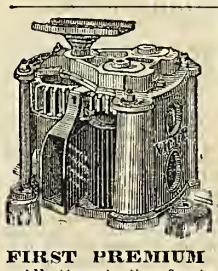

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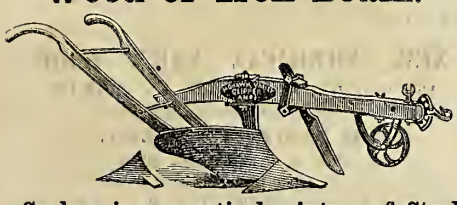

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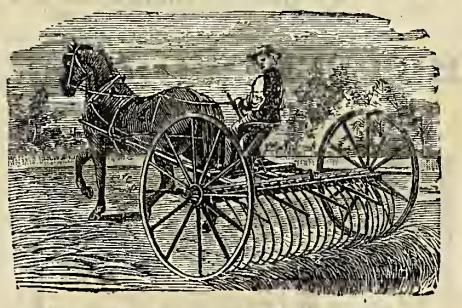

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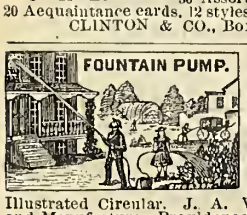

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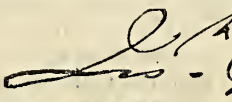

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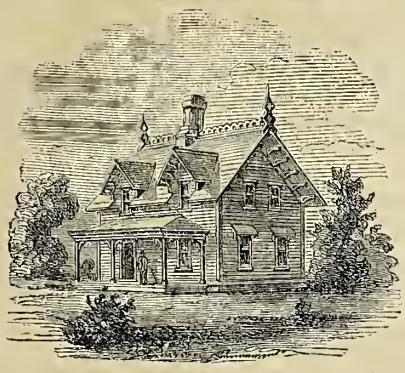

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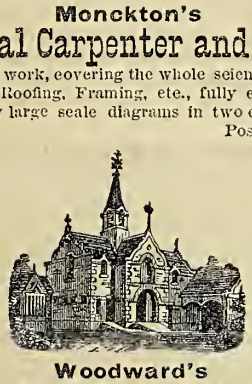

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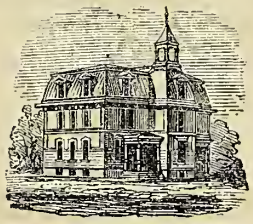

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 288.

A Turnip Soil.—The popular idea in favor of immense roots is shown to be an unwise one by the results of investigations into the comparative feeding value of the largest and moderate sized roots. The latter have been found the more valuable in a very considerable proportion. Recently some experiments made in feeding turnips grown upon a rich clay soil, have shown that these roots thus grown are more valuable for feed than when grown upon sandy soils. The results show that the choice or the preparation of the soil for this crop is of great importance. Few crops are more carelessly grown than this, and it is a seasonable matter for consideration at this time that a good feeding root is not grown upon either a poor or an extra rich soil.

A Large Egg.—An Aylesbury duck in England is reported to have laid an egg 10½ inches long and 9½ inches in girth. This extraordinary egg weighed 8 ounces; the outer shell contained two yolks, and also a perfectly formed egg of the usual size and character.

Veterinary Obstetrics.—A new work, a "Text Book of Veterinary Obstetrics," by George Fleming, the well known English veterinary surgeon, and Editor of The Veterinary Journal, is announced. This work, treating as it does of those most important functions of animal life, pregnancy and parturition, will fill a void in veterinary literature, and will meet one of the greatest needs of the farmer and stock breeder. The many ailments to which stock are subject during this period, and the serious losses borne by stock owners in consequence of these ailments, chief among which are abortion and puerperal fever, render the careful and practical treatment of them of the highest importance, and a trustworthy text book relating to them of the greatest value. The work will be published in eight or ten parts, to appear at intervals after the present month. The publishers are Bailliere, Tindall & Co., London.

Swelling on a Colt's Throat.—"J. A.," Clayton Co., Iowa. Swellings beneath the jaw on the throat of a colt frequently occur as the result of a cold, or the colt is sometimes dropped with them. They may be removed by rubbing them with common iodine ointment, or more slowly but as effectively in the end by rubbing the skin well with mustard mixed with warm water. A dram of chlorate of potash may be given in some sugar, or a little oat-meal which the colt may be induced to lick.

The Duncan Strawberry.—Our plants of this variety have not yet fruited, and our knowledge of it is confined to an examination of very abundant specimens sent by its introducers, E. & J. C. Williams, Montclair, N. J. The notable quality of the fruit is its great firmness; it has a good color, and runs of a very fair size. In quality it is better than the Wilson. From what we have thus far seen of it, we regard it as a very promising market berry.

The Effect of "Breeding" and Feeding upon the Skin.—An article in the Shoe and Leather Reporter, by Mr. J. S. Schultz, an extensive and thoroughly well informed tanner, makes a curious reference to the effect of the high breeding to which Short-horn stock has been subjected for some years, upon the quality of the hide, and also to the effects upon the condition of the skin, of high feeding, starvation, and climate. Thus hides grown in a cold climate such as Canada or Russia, are thick and coarse in texture and fiber, and those from warm countries are fine and thin. The hides of "improved" cattle are thin and less valuable than those of the semi-wild cattle of South America and Texas, and in this respect the improved breeding which these cattle are undergoing, tends to overcome the influence of climate, and is changing the character of their hides. Poor feeding and ill health, as might be expected, cause the hide to be fine and close in texture, shrinking the fiber; this result follows the condition known amongst farmers as "hide-bound." It is not held as a serious consideration amongst farmers, how much the hides of their cattle may be worth, but yet as the value of the skins as a material for the manufacture of so widely used an article as leather, is of no little consequence to the world at large, it is interesting to note that the better the cattle are fed and cared for, the better is the leather manufactured from their hides.

The New York Horticultural Association.

ITS FIRST EXHIBITION.

The reproach that New York, the commercial center of horticulture, had no Horticultural Society, has been removed by the formation of the association named above. We have kept our readers advised of the doings of this new society, as it contains the right material for making it one of the most important horticultural organizations in the country. Its location is such that whatever is new and valuable in horticulture will, as soon as its existence becomes generally known, naturally gravitate towards it, and it will, if rightly managed, assume a position which older societies elsewhere (all honor to them), have been many years in achieving. The new Association held its first exhibition from June 12th to the 15th, at Gilmore's Garden, the building formerly known as the Hippodrome. Probably every one who attended the exhibition was surprised at its extent. Plants in pots were its strong feature, and these were remarkable, not only for their numbers, but for the excellence of the individual specimens. An English horticulturist, who was present, informed us that some of the collections would attract attention at any of the great exhibitions of Europe, so fine were the plants composing them. Being engaged upon other matters, we requested Mr. W. J. Davidson, No 322 Fulton Street, Brooklyn, the Secretary, to give us a list of the most important plants and cut flowers exhibited; he did this in so complete a manner that we are unable to make room for the lists as he gave them, and were obliged to abbreviate. If any of our horticultural friends feel that they are not sufficiently noticed, they must blame the editor rather than Mr. Davidson.

George Such, South Amboy, N. J., several rare and curious East Indian Pitcher plants, including *Nepenthes Dominiana*, *N. Rafflesiana*, with immense bearded pitchers, *N. rubra*, *N. Sedeni*, and several others. Some of these had enormous pitchers, which would hold a pint or more, and were an attractive novelty to most visitors. Of Palms he had the rare *Martinezia erosa*, *Bactris chætorachis*, *Verschaffeltia melanochætis*, and *Veitchia Canterburyana*. The lovely Maiden Hair Ferns were represented by the graceful *Adiantum Farleyense* and *A. Peruvianum*. Among other ferns were the rare (in this country), *Gleichenia flabellata* and *G. speluncæ*, and a magnificent plant two and a half feet in diameter, of *Pteris scaberula*. He also exhibited the singularly beautiful Flamingo plant, *Anthurium Scherzerianum*, from Costa Rica, the chaste *Eucharis Amazonica*, and a lovely white *Cypripedium* from Moulmein, *C. niveum*, the flowers of which had been expanded for three months. Among the noticeable plants in Mr. Such's collection were *Paullinia thalictrifolia*, *Campsidium filicifolium*, a very neat plant of *Nertera depressa*, with the beautiful coral berries nestling among the moss-like leaves, and a noble specimen of one of our southern pitcher plants, *Sarracenia flava*. All the plants were in full vigor, and indicated masterly cultivation.

Mr. William Bennett, Flatbush, L. I., contributed a collection comprising many rare novelties, including fine plants of *Curculigo recurvata variegata*, *Croton Weismanni*, which looks as if it would be the most useful of the genus, a finely colored plant of *Croton undulatum*; *Dieffenbachia Bausei* (very distinct); *Dracæna amabilis*, and *D. splendens*, a dwarf bright colored variety. A large plant of the variegated New Zealand Flax, *Phormium tenax variegatum*, and also *P. Colensoi*, *Maranta Makoyana*, *Beaucarnea recurvata*, *Bonapartea hystrix*, and *Croton Veitchii*. Mr. Bennett also exhibited excellent plants of *Pandanus Veitchii*, a beautiful broad-leaved, white-striped screw-pine, *P. Vandermeerschii*, *P. graminifolius*, and *P. Javanicus variegatus*. A few neat Caladiums, the most beautiful being a new variety called "Excellent," a large, well colored plant of *Aspidistra elatior variegata*. Mr. Bennett's collection also comprised fine tree ferns and fine specimens of rare but humbler ferns. Among succulents, the most prominent were *Agave applanata*, two splendid plants of *A. filifera*, *Yucca aloifolia variegata*, and *Y. quadricolor*. He also exhibited some of his special pets in Palms, including the lovely *Cocos Weddeliana*, and others which we have not room to mention, with good plants of *Dion edule* and *Cycas revoluta*. His collection was one of the features of the exhibition, every plant perfect, and arranged with care and taste.

Mr. Isaac Buchanan, 9 West 17th Street, New York, also sent a large collection, consisting principally of Orchids, besides which were some very fine specimens of Ferns, Palms, Agaves, and other succulents. A new Fuchsia, and very promising, from St. Domingo, was exhibited by him for the first time.

Mr. W. C. Wilson, Astoria, L. I., sent a well-grown miscellaneous group of stove and greenhouse plants, ferns, etc., the most interesting being four large *Cycas revoluta*, the plant incorrectly called Sago Palm, *Dracæna regina*, *D. Guilefoylei*, and others. *Dion edule*, *Ficus Parcelli*, Alocasias, Caladiums, and a neat group of ferns.

From Mr. James Paterson, Newark, N. J., came some noble Orange trees full of fruit, large Palms, Dracænas, Pandanads, Agaves, Anthurium, a very interesting collection of Orchids in bloom, principally varieties of *Cattleya Mossiæ*.

Mr. John Bush, of the Tremont Botanic Gardens, Tremont, N. Y., exhibited six fine plants of *Musa Cavendishii*, the dwarf Banana, a fine plant of *Musa coccinea*, in flower, *Dieffenbachia Bausei*, *Areca oleracea*, and other plants, including a choice group of rare Ferns.

Mr. B. Fagan, West Farms, also sent a well-grown lot of choice Ferns.

Mr. W. L. Fischer, Superintendent of the Central Park gardens, had a very fine and ornamental group of large Palms, Tree Ferns, Dracænas, Crotons, Pandanads, and other variegated leaved plants, closely followed by Mr. John Thornhill, of Gilmore's Garden, who grouped his plants with great taste, and exhibited a noble *Pandanus utilis*, a number of Palms, Dracænas, and plants of a like ornamental character.

To a great many, both of the trade and of the visitors, the most interesting plants were those contributed by S. B. Parsons & Sons, Flushing, L. I., who in addition to taking first-class prizes in variegated plants, Azaleas and Ferns, showed a very rare and choice lot of variegated Maples and Oaks sent from Japan by Thomas Hogg; also many rare Conifers, and other noticeable plants, the list of which is too long to reproduce.

R. B. Parsons & Co., Flushing, L. I., exhibited six large Rhododendrons of the most hardy type and of varied colors. The Rhododendron has suffered a great deal in this country by English firms sending out varieties hardy there, but too tender to stand our severe winters. Those grown by Messrs. Parsons & Co., having been fully tested in their exposed grounds, are perfectly hardy, and of a wonderful range of color. The same firm also exhibited cut blooms of Rhododendrons, Hardy Shrubs, and Roses, that attracted much attention.

Mr. Charles Zeller, Flatbush, L. I., brought a neat collection of Agaves and Aloes, and a stand of cut blooms of his specialty, the Monthly Carnation, containing some very promising seedlings.

Mr. Peter Henderson showed six well-grown Golden Tricolor Pelargoniums.

Mr. Riddle, gardener to Elisha Brooks, Esq., sent two splendid standard *Achyranthes Gilsoni*, several feet high, with three tiers of branches on each, a very neat pan of Caladiums, and a large hanging basket of the beautiful Fern, *Nephrolepis tuberosa*.

Mr. John Henderson, Flushing, L. I., sent a quantity of the climbing Japanese Fern, *Lygodium scandens*, beautifully grown, the plants being about five feet high and tastefully grouped to form a fairy bower.

The exhibition of cut flowers was very good for the season, more especially in roses, where Mr. William A. Burgess, of Glen Cove, keeping up his old reputation, showed a very fine collection, carrying off the first honors; his "Marechal Niels" being especially fine.

Messrs. Peter Henderson, William C. Wilson, R. Parsons & Co., August Dejonge, and others, also contributed largely, and by renewing their blooms at intervals, added much to the success of the meeting.

Mr. Peter Hanson, Brooklyn, N. Y., a most successful and extensive cultivator of lilies, exhibited cut blooms of several novelties, including *Lilium Hansoni*, *L. Washingtonianum*, and *L. Humboldtii*, from the west of the Rocky Mountains. Mr. Hanson also received a special certificate for a seedling lily raised from *L. bulbiferum*, named by the judges *L. bulbiferum aureum marginatum*. [Why should the judges indulge in Latin names for garden varieties?—ED.] the entire stock of which was bought by Mr. Court, of Veitch & Sons, London, who was present, and kindly acted as one of the judges on plants.

The decorative florists of New York, came out in full force and exhibited rare specimens of their works in floral designs, displaying novelty and richness. Messrs. Hanft Bros., F. Gordon, Ekirch & Wilson, Walter Reid, Jas. Sutton, and A. McConnell, taking the principal prizes, while Messrs. Lynch, Fitzpatrick Dards, Sealey, Gordon, and others, contributed largely to the success and beauty of that department by sending designs and bouquets not for competition, and renovating and renewing them every afternoon.

Fruits and vegetables were not largely represented, the exhibition being about a week too early for a good show of strawberries.

Mr. Robert Carey, gardener to Miss Hattie B. Trimble, Westchester, Pa., exhibited six varieties of hot-house grapes, all well grown and well colored; two bunches of "Black Barbarossa" being especially fine. Mr. John Jones, Madison, New Jersey, showed two fine bunches of "Black Hamburg."

In strawberries, Mr. Peter Henderson, South Bergen, N. J., showed fine dishes of "Wilson," "Col. Cheney," "Monarch of the West," "Black Defiance," and "Seth Boyden."

Mr. William A. Burgess, Glen Cove, L. I., had a fine dish with a plant in fruit of his new seedling strawberry, "Queens Co.," which was awarded a special certificate.

Mr. Henshaw, New Brighton, S. I., showed splendid dishes of "Seth Boyden," taking the premium for the best two quarts of any variety.

Mr. Durand, Irvington, N. J., exhibited a number of his new seedlings which arrived too late to come before the judges, but which we hope to see again under more favorable auspices.

In vegetables, some good Asparagus came from G. J. Olden, Rochelle Park, N. J., and Mr. James Riddle, gardener to Elisha Brooks, Esq., Inwood, N. Y., showed some ears of early corn and a small collection of early vegetables.

Cure for Spavin.—"C. G.," Rockland Co., N. Y. The cold-water cure for bog spavin is applied in the following manner. Take a piece of cotton cloth, one yard long, tear it into strips, 3 inches wide, and sew the strips together at the ends. Make the cloth into a roll; then take the roll in the hand, and wind the cloth around the affected part of the leg. After a few turns place a piece of cork, a quarter of an inch thick, upon the cloth and over the spavin, and then again wind the cloth. If the cloth is apt to slip, wind it around the hock-joint, or put some tar upon the leg above and below the spavin, to which the cloth will adhere. The pressure exerted by the cloth, and the coolness produced by the water, in which the bandage is kept soaked, reduce the circulation, and also the heat of the parts. The bandage should be kept on the leg until a cure is effected. It should not be made so tightly as to hurt the horse.

Wire for Binding Grain.—"A. G.," N. Y. There are two or three self-binding attachments to harvesting machines in use, that use wire for binding. The only objections to wire are that it may get into the thrashing machine, and flying out with the straw, may injure persons who come within range of the fragments, and that pieces of wire may be swallowed by cattle along with the straw, and cause their death. A $20,000 cow was recently killed by a piece of wire in the stomach.

Milk from Virgin Heifers.—"G. M.," Roslyn, L. I. If a young heifer is sucked by other calves, she will easily be brought to milk. This is frequently the case, and it is but a year or two ago, since we noticed the fact that Mr. Wm. Crozier, of Northport, L. I., had two virgin heifers among his herd at that time that were in milk, one only fourteen months old, and one less than that. The fact may be taken as an indication of good milking quality

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Importation of Pigs.—The Massachusetts Society for Promoting Agriculture, have recently imported five trios of pigs from England, one each of the large, middle, and small white breeds, and the large and small black breeds. This is the nomenclature at present recognized by the Royal Agricultural Society of England, and we think with justice and propriety. The various breeds recognized in this country vary so much in character, as to be at times undistinguishable, and this difficulty must necessarily increase rather than diminish, from the multiplicity of breeders, each of whom has a different idea of excellence or method of treatment. By and by we shall have to adopt the same nomenclature, from the utter impossibility of defining what is a small Yorkshire, or a Suffolk, or a Cheshire, a Jefferson County, or a Chester White. We hope the Massachusetts Society will adopt the nomenclature along with the pigs. The pigs are at Milwood Farm, Framingham, Mass., where those interested may inspect them.

Fish Flour.—The exhibit from Norway, to be found in the Agricultural Building at the Centennial, is conspicuous for the quantity and variety of fish and fish products. Among these may be found some biscuits made from "fish flour," a preparation invented by Mr. Anton Rosing, an accomplished Norwegian agricultural chemist, who died in 1866. These biscuits were baked before the inventor's death, and are now in good preservation, after having been kept for ten years in an unsealed jar They were intended to be applicable as food for soldiers, sailors, miners, and farmers, to whom a supply of fish, other than salted, is beyond reach. This use for the invention, however, suggests another that is of the greatest importance to us, viz., the utilization of the large quantities of fish scrap made on the coasts, as a refuse of the fish-oil manufacture, as food for stock—chiefly pigs, sheep, and poultry. The proper preparation of this material for feed, either alone, or mingled with bran, corn meal, or other products of grain, would doubtless be a great economy, both for feeding and enriching the manure. Mrs. Anton Rosing, the widow of the inventor, now controls the manufacture, and would gladly communicate with parties here in reference to it.

Some Questions as to Hogs.—"A. A. V.," Summit Co., Ohio. Oat straw is not injurious to young pigs; on the contrary, being soft, it makes a better bedding for them than any other kind of straw. It is, however, too valuable, as fodder for cattle or horses, to be used for bedding, when earth, sand, leaves, or any other dry absorbent can be procured. To decide which is the most profitable breed of hogs for a farmer to keep, is more than one person could do. The whole Swine Breeder's Convention failed to decide this question either for themselves or for others. Any good pig is a profitable animal to keep, and there are good pigs of all the established breeds. A farmer should procure a thoroughbred boar of the breed he most fancies, and then raise half-bred pigs from the best common sows he can find. It does not pay a farmer to keep all thorough-breds for the most profit; he should raise grades and feed and keep them well. The Essex pigs are entirely black.

Suffolk, or Small Yorkshire.—"L. P. W.," Quincy, Ill. The difference between these two breeds of pigs would be difficult to decide. Our modern improved breeds of pigs are all made up by crosses, which have been made to suit the fancy of breeders, and therefore different strains show great variety. It would not make a Suffolk anything else than a Suffolk, if a cross of small Yorkshire was used for a distinct purpose, and the produce then bred with the Suffolks again, any more than the Berkshires or Essex are made other than what they were by a "*dash*" of Neapolitan blood; or a Cotswold sheep would be made something else by a cross of Leicester blood. If the pigs are improved, much discretion may be allowed to a capable and judicious breeder.

Sheep-Raising in the West.—"D. F. E.," Strasburg, Va. Perhaps the safest plan for any person, who wishes to undertake sheep-raising at the West, would be to spend a year in learning the business, and seeking a good location in the locality which he may choose. Perhaps Kansas, Nebraska, or Colorado, on the whole offer the best opportunity. One might visit Hutchinson in Reno Co., on the Atchison, Topeka and Santa Fe railroad; Salina, Ellsworth, or Victoria, on the Kansas Pacific railroad; Lincoln, Neb., on the Burlington and Missouri railroad, and then look along the Union Pacific railroad in Nebraska and Colorado, choosing a location where best suited. The cost would be small compared to what might be lost by making a hurried location.

Corn or Wheat for Poultry.—"G. Q. P.," Culpepper Co., Va. "Scientific" journals, so called, are not always trustworthy as to their statements. That corn does not provide sufficient fat or albumen for the requirements of a laying hen, while wheat supplies these necessaries in abundance, is incorrect as to the corn; for corn contains five times as much fat as wheat, and more than three-fourths as much as albuminoids. In fact, corn is a richer food for hens than wheat. Also that "corn-fed hens do not lay, while wheat-fed ones do," is a mistake. But a change from corn to wheat is healthful and advisable, not that corn is not sufficiently nutritious, but that a variety of food is well for all animals.

Feeding Grain to Calves.—"G. C. P.," Wapello Co., Iowa. To feed raw grain to a young calf would be injudicious; but to give a well-boiled gruel of oat, wheat, or corn meal in moderation, until the calf became at least three or four months old would be useful, then it could digest a moderate quantity of meal.

Goats versus Rats.—"W. L. R.," Chilicothe, Ohio. It is a very prevalent opinion that rats will not stay where goats are kept, and if this is a fact, we must say we respect their judgment. We cannot say from our own knowledge as to this, but a friend who some years ago took a farm that was overrun with rats, assures us that they have disappeared since some Angora goats were brought on to the premises. Our own farm was at one time infested with rats, but they disappeared upon the application of vigorous measures, although no goat was upon the place. So the question has two points of view, and may be considered a doubtful one.

Right and Left Again.—Which is right and which is left, in the case of twining vines climbing a pole, is still a puzzle to some of our readers. We thought we had set it all right in the February number, p. 75, but one important little matter was left out of our explanation, which quite spoiled it. We will do it over, and hope for better success. We should have attended to it before, but have been in such a whirl of occupation for the last two or three months that we could hardly tell our right hand from our left, and the letters of our correspondents got mislaid.—Now then: When we told our original correspondent to stand before his bean pole and see which direction his bean-vine took, we expected him to *face the pole*; but we forgot to tell him to "face the music," we mean the pole, all the time he was marching round. Keep your eye on the pole and go round. You will go to the left if you follow your bean-vine, to the right if you follow your hop-vine. By omitting to state this, and telling our correspondent to "walk round," we led him into the muddle instead of out of it. Probably our correspondent will add that it is an awkward business going round a pole crab-fashion. We will save him the trouble by asking him to come up to the pole on any side he likes. On whichever side he comes to it he will see his bean-vine turning from his left to his right as it ascends, his hop-vine from right to left.

Failure to Grow Potatoes in Colorado.—"R. D. R.," Trinidad, Col., writes, that potatoes are not a sure crop in that locality, the tops growing profusely, but the tubers are very small, and he asks what is to be done about it. We should be glad to hear from some of our readers in Colorado or New Mexico in relation to this matter. A case which might give a clue to the cause, and a remedy, happened in our experience. A piece of heavily timbered ground was cleared and burnt over, the ashes being spread upon the burned soil, which was planted to potatoes. The crop was very large as to vines, but nothing as to tubers, except in a small piece where the tops were mowed down. Here the crop was very fair. The next year, after the ashes had been leached by a season's rains, a very large crop of potatoes was taken off. Is the soil in question rich in potash, as a feldspathic or granitic soil might be in that dry region? If so, copious irrigation might improve it.

How to Mend a Fowl's Broken Leg.—When a valuable fowl happens to break a leg, the accident may be repaired with the greatest ease. Place the bird upon the saddle described on p. 96, March No., and carefully adjust the broken limb. If it is the thigh bone that is broken, cover the injured part with mucilage or glue, plastering the feathers down on to the flesh; then cover the leg with a thick coat of the glue or mucilage, and sprinkle flour upon it until the moisture is absorbed. If the lower bone is broken, do the same, and afterwards cover the part with a few thicknesses of brown paper, softened in the mucilage or glue. In an hour, or as soon as dry, the dressing will be firm, and the bird may be set at liberty. To prevent injury to the dressing, keep the bird by itself in a quiet place for a few days.

Swiss Cows.—"G. J. A.," Worcester. The Swiss cows have a good reputation as abundant and rich milkers, but we have no information as to the average percentage of cream contained in their milk. At present the Jerseys and Guernseys stand in this respect ahead of all other cows, their milk yielding on an average about 25 per cent of cream, and some cows of these breeds have surpassed this.

The Best Feed for the Growth of Wool.—"Wool-grower," Beatrice, Neb. For the best growth of wool upon Merino sheep, corn is generally considered to be the best feed. But cheapness and convenience are to be considered, as well as healthfulness. Corn is the cheapest and most convenient feed in the Western States, and although some other additional feeds might be desired, yet we know of none, unless it may be linseed oil-cake, which is made in the West, and can be procured cheaply, that could be added to it profitably. For long-wool sheep corn alone is not desirable, as it does not produce the silky fiber that is so much valued. For these sheep roots should be added to the corn, and sugar beets and mangels are best in the West, where the soil and climate are favorable for their growth.

Floral Decorations for Dwelling Houses, by Annie Hassard. London and New York, Macmillan & Co. All readers of English horticultural papers are aware that Miss Hassard occupies a high position as a floral decorator, as she has taken many prizes for her designs, and is a frequent contributor to the journals. The present volume (said to have been Americanized), gives all the mechanical operations and designates the materials to be used for table, room, and window decorations, the making of hand and button-hole bouquets, and for the arrangement of flowers and plants for various decorative purposes. The work is abundantly illustrated, not forgetting our old window box of Dracænas. Some years ago we had in our dining-room a window box containing Dracænas, which we thought effective, and making a pencil sketch, had an engraving made of it for "Hearth and Home." It is very amusing to see how that has gone the rounds of books on window gardening, horticultural journals, and now, after the plants have been thrown out for years, they stare us in the face in the present work, where, by the way, they are in very good company.

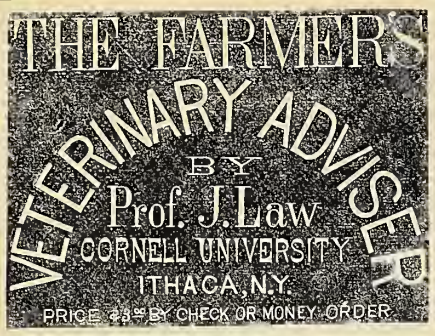
What is a Month?—"W. A. H." When a man agrees to work for eight months, the time counts according to the calendar, as from the first of one month, or any other day of it, to the first of another month, or any other day corresponding to that upon which the term began. Twenty-six working days may be a month, or may not, and there is no binding rule or custom anywhere, that we know of, by which that number of days is held to be a month. There are 313 working days in a year, and 12 months of 26 days each, would give but 312 days in the year, so that an arbitrary rule making 26 days to be a month, would cause a loss of one day to the employer. Where a man is hired by the month, it is the usual custom, as far as we know, and as we have practiced it, to make no deduction for legal holidays. On those days the hired man is expected to do necessary work, such as feeding and cleaning the stock, but no more. Where he is paid at a fixed daily rate, all holidays or idle days are deducted, and he is paid only for the actual time he has worked. In making agreements there should always be a written contract, which would prevent disputes and misunderstandings, either wilful or accidental.

Warm Slops for Pigs.—"G. S.," Mason Co., Ill. Pigs, having a thick protective layer of fat beneath their skin, and being fed upon concentrated and highly carbonaceous food, do not need to have warm feed. We have not found warm feed to agree with them and prefer to give it cool, or at most, only very slightly warm. But slops given in a half frozen condition are to be avoided as injurious and wasteful. In considering the question of cooked food fed while warm, as a saving of vital heat, we must not overlook the necessity for consulting the nature of the digestive organs and accommodating our practice to their peculiarities. There is a "golden mean" to be observed in all departures from natural conditions, and wide or sudden divergences are seldom wise.

Tumor on the Eye.—"A. McF.," Napa Co., Cal. Cows sometimes suffer from tumors of a fungoid character, which grow from the corners of the orbit of the eye. These frequently originate in the "hook" or membrane, which sweeps and cleans the eye-ball. When the tumor becomes enlarged, bleeds, and is highly inflamed, it is sometimes necessary to have it cut away by a surgeon. But this operation, which is rarely entirely successful, may often be avoided by treating the tumor with a safe caustic, such as nitrate of silver. A solution of 10 grains of this, sold as lunar caustic, to one ounce of distilled or pure rain water, should be applied twice a day to the tumor, with a camel's-hair pencil. This should be done as soon as possible. When the knife has been used, some portions of the tumor remain, and these will grow and enlarge if they are not at once removed by the caustic. The application of the caustic should therefore, in nearly all cases, follow the use of the knife. These tumors are known as *fungus hæmotodes*, and generally result from a scrofulous condition of the animal. Consequently they are rarely entirely cured, but when repressed in one place, they appear in another. An animal troubled with them is not a desirable one to breed from, as the disease is hereditary.

Steep for Seed Wheat.—"Farmer," Independence, Iowa. No wheat should be sown without being steeped, as a preventive of rust and smut. These are supposed, with good reason, to be different developements of the same fungoid plant which preys upon the wheat plant, and the spores of which adhere to the seed and are sown with it. The steep we have always used is a solution of 4 ounces of bluestone (sulphate of copper), dissolved in one gallon of water; this is poured over 5 bushels of seed, which is left to soak for 24 hours.

The Effect of a low Temperature upon Milk and its Products.—L. H. Agmé, New York, sends the following as a translation of a note of M. Eugene Tisserand, of Paris, in relation to the effects of a low temperature upon milk, cream, butter, and cheese: "If milk, immediately after being drawn from the cow, be submitted to different temperatures, from 32° to 96° Fahr., and be kept at the initial temperature during twenty-four or thirty-six hours, the following facts are observed: 1. The separation and rising of the cream is proportionately more rapid as the temperature is nearer 32° Fahr. 2. The volume of cream is greater, as the temperature to which the milk is subjected is lower. 3. The transformation into butter is also more productive when the temperature is lower. 4. Finally, the cream, butter, and cheese, are all of better quality in the latter case."—If the above observations are well founded, it would seem that our gradual progress towards the cooler setting of milk and the use of ice in dairies is justified and proper. The Hardin process, which we recently described and illustrated, is based upon the principle involved in the above note, and the results of that process, so far as it has been tested, have appeared to be very much the same as above observed by M. Tisserand.



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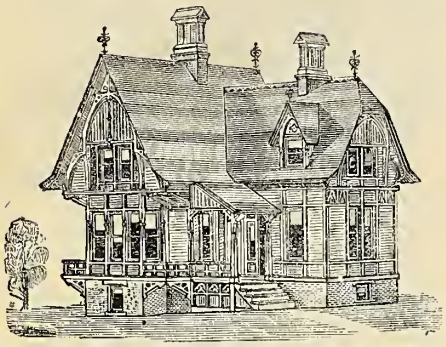

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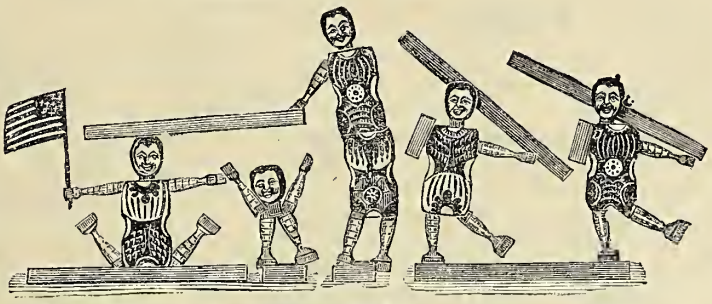

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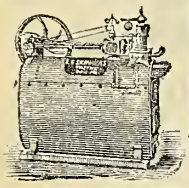

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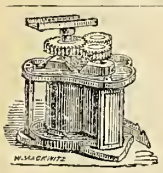

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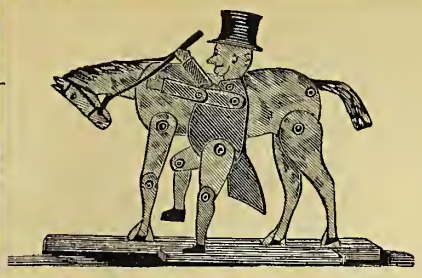
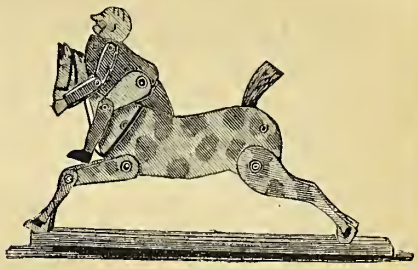
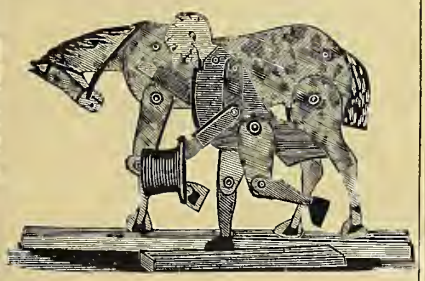


John Gilpin at his horse's side
Seized fast the flowing mane,
1 *And up he got in haste to ride,*
But soon came down again.

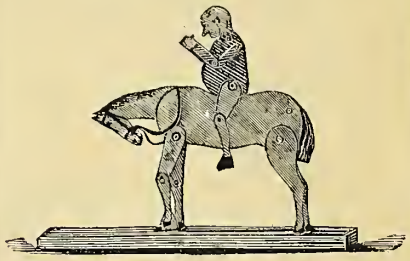
Away went Gilpin, neck or naught;
Away went hat and wig;
6 *He little dreamt, when he set out,*
Of running such a rig.



Stop, stop, John Gilpin—here's the house—
They all at once did cry;
8 *The dinner waits, and we are tired,*
Says Gilpin—So am I.



For saddle-tree searce reached had he,
His journey to begin,
2 *When turning round his head he saw*
Three customers come in.



So, turning to his horse he said,
I am in haste to dine;
9 *'Twas for your pleasure you came here,*
You shall go back for mine.

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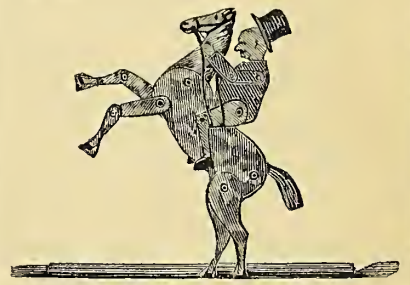
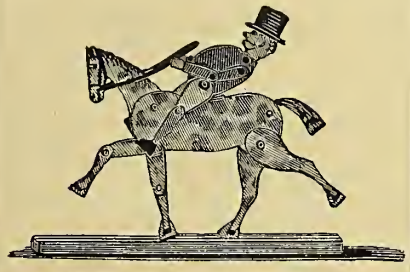
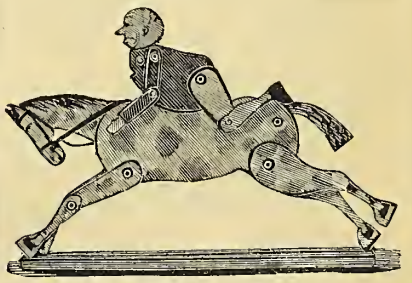
Upon his nimble steed,
3 *Full slowly pacing o'er the stones.*
With caution and good heed.



Whereat his horse did snort, as he
Had heard a lion roar,
10 *And gallop'd off with all his might,*
As he had done before.

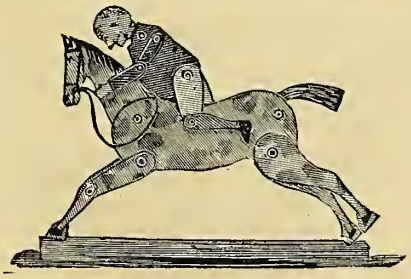


But finding soon a smoother road,
Beneath his well-shod feet,
4 *The snorting beast began to trot,*
Which galled him in his seat.

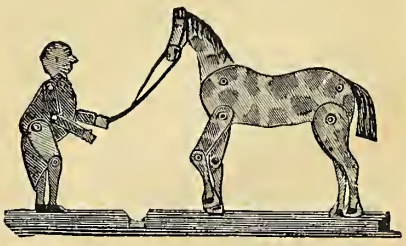


Away went Gilpin, and away
Went Gilpin's hat and wig;
11 *He lost them sooner than the first,*
For, why?—they were too big.

So stooping down, as needs he must
Who can not sit upright,
5 *He grasped the mane with both his hands,*
And eke with all his might.



And now as he went bowing down,
His reeking head full low,
7 *The bottles twain behind his back*
Were shattered at a blow.



And so he did, and won it too,
For he got first to town—
12 *Nor stopped till where he had got up*
He did again get down.

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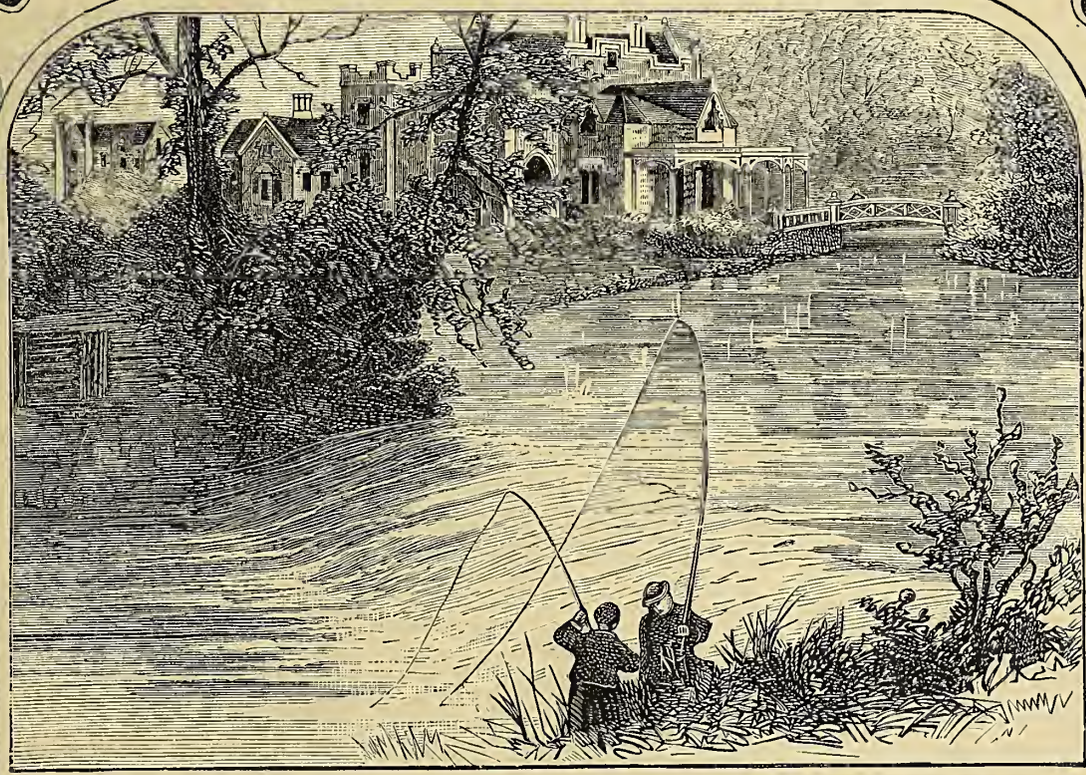

Vol. XXXV. Number 9.

PUBLISHED BY THE
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Laying out Flower Garden and Lawn; Designs for Grounds and for Greenhouses; Soils for Potting; Cold Frames; Hot-Beds; Greenhouses Attached to Dwellings; Modes of Heating; Propagation of Plants by Seeds and by Cuttings; Culture of the Rose and Tuberose; Growing of Winter-flowering Plants; Construction of Bouquets, Baskets, etc.; Parlor and Window-Gardening; Wardian-Cases and Ferneries; Insects; What Flowers Grow in the Shade; Culture of Grape-Vines under Glass; The Profits of Floriculture; How to Become a Florist, etc., etc.

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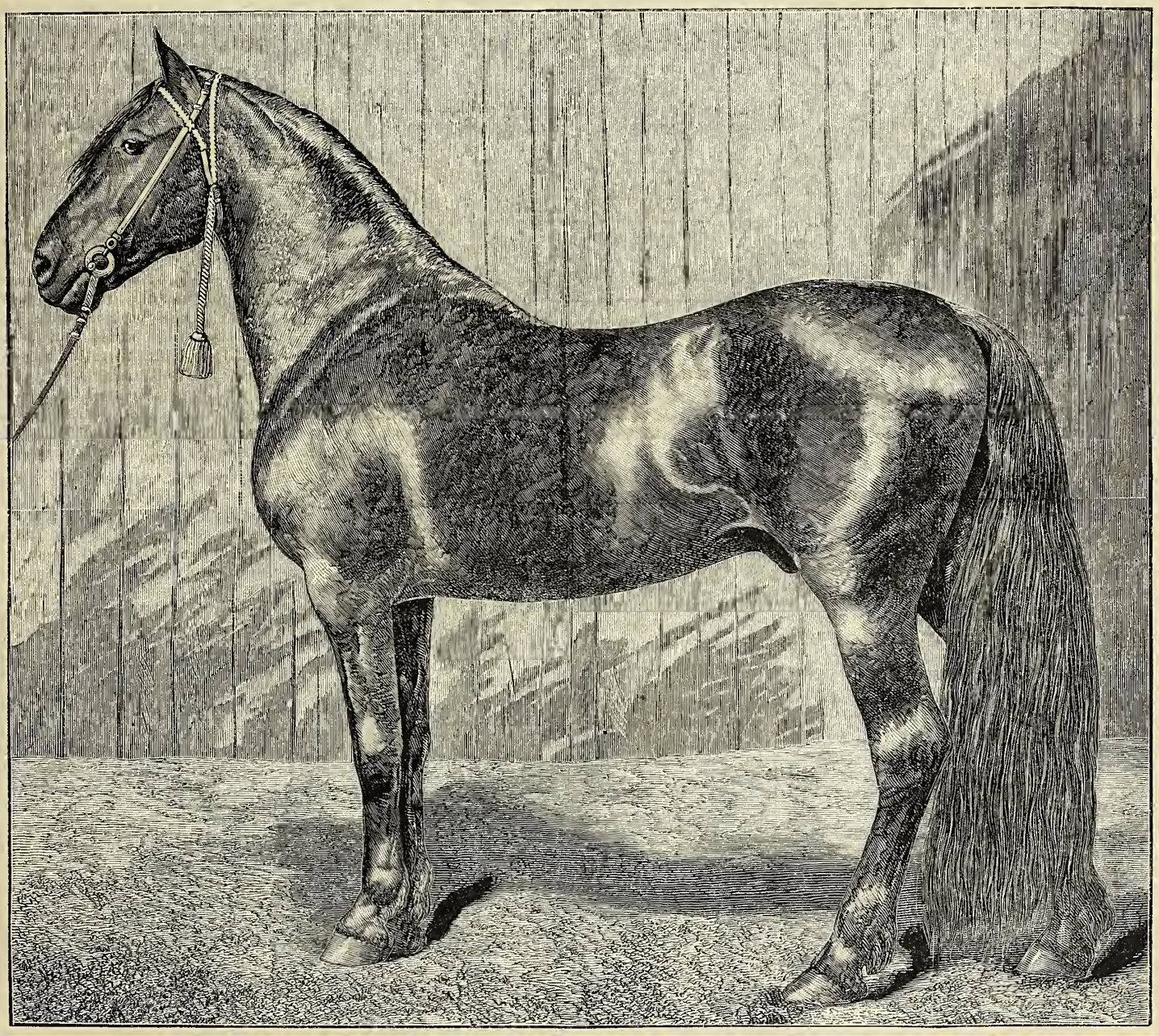

ORLOFF STALLION "PRAVNOUK."—*Drawn and Engraved for the American Agriculturist*

A short time ago Mr. Mœrder, Secretary of the General Directory of the Imperial Studs of Russia, sent to the editor of the "Turf, Field and Farm," of New York, a number of photographs of trotting horses of the Orloff breed. Through the courtesy of the "Turf, Field and Farm," we are able to give the accompanying portrait of a famous stallion of this breed, which is copied from one of the photographs sent by Mr. Mœrder. The excellence of these photographic portraits should set at rest those objectors, who pretend that no accurate, life-like portrait of an animal can be procured by photography. Although there are some unavoidable seeming distortions of parts of the figure in a photograph, yet these so readily adapt themselves to the eye of the intelligent observer—just as the seeming inaccuracies of a perspective view of a building are recognized and understood—that a photograph is a far more satisfactory manner of "holding the mirror up to nature," than the majority of drawings or paintings would be, unless done with perfect fidelity and great skill. In the photograph we see the animal as it is, which should be in every way satisfactory to those who would so represent it. In the *American Agriculturist* for August (page 294) reference is made to this breed of horses, and some information given as to their breeding and character. Mr. Mœrder has written a pamphlet upon "The Russian Trotter," it which the history and achievements of these horses are set forth in a full and interesting manner. No horse is considered as a pure Orloff, unless he has descended directly from an Arabian horse, "Smetanka," which was the founder of the race. This horse possessed an extra pair of ribs, and his skeleton is still preserved in the museum at St. Petersburg. The stallion here represented is "Pravnouk," in color brown-bay, age 16 years, hight 16¼ hands, and raised in the stud of Mr. Divov. This stallion is now serving in the stud of Mr. Pavlov. It is this breed which is used in the production of a class of horses, now in demand in Russia for carriage horses.

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Composting Pond Mud.—"G. J. F.," Phillipsburg, N. J. To compost pond mud it is proper to throw it in piles upon the bank to drain, and when it is only moist, and not *wet*, to mix it in layers with barn-yard manure, and if desired, with lime. If one load of coarse stable manure, one bushel of lime, and five loads of the drained mud, are evenly mixed and left to decompose, there will be no loss of ammonia, as the mud will absorb all that is set free from the manure. The heap should be made about four feet high, flat, and slightly hollow upon the top, to hold all the rain that may fall.

Calendar for September.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n sets.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	F	5 24	6 37	2 55	5 27	6 33	3 0	5 29	6 31	3 5
2	S	5 26	6 33	4 0	5 28	6 31	4 4	5 30	6 29	4 7
3	S	5 27	6 32	rises	5 29	6 30	rises	5 31	6 28	rises
4	M	5 28	6 30	6 48	5 30	6 28	6 48	5 32	6 26	6 47
5	T	5 29	6 28	7 6	5 31	6 26	7 8	5 33	6 24	7 9
6	W	5 30	6 26	7 28	5 32	6 24	7 31	5 34	6 23	7 33
7	T	5 31	6 25	7 54	5 33	6 23	7 58	5 35	6 21	8 2
8	F	5 32	6 23	8 24	5 34	6 21	8 29	5 35	6 20	8 35
9	S	5 33	6 21	9 4	5 35	6 19	9 11	5 36	6 18	9 17
10	S	5 35	6 19	9 51	5 36	6 17	9 58	5 37	6 16	10 6
11	M	5 36	6 17	10 52	5 37	6 16	11 0	5 38	6 15	11 7
12	T	5 37	6 15	morn	5 38	6 14	morn	5 39	6 13	morn
13	W	5 38	6 14	0 6	5 39	6 13	0 12	5 40	6 12	0 29
14	T	5 39	6 12	1 25	5 40	6 11	1 30	5 41	6 10	1 36
15	F	5 40	6 10	2 43	5 41	6 9	2 47	5 41	6 9	2 51
16	S	5 41	6 8	3 58	5 42	6 7	4 0	5 42	6 7	4 3
17	S	5 42	6 6	sets	5 43	6 5	sets	5 43	6 5	sets.
18	M	5 43	6 5	6 22	5 44	6 4	6 22	5 44	6 4	6 24
19	T	5 44	6 3	6 39	5 44	6 2	6 41	5 44	6 2	6 44
20	W	5 45	6 1	7 9	5 45	6 0	7 13	5 45	6 0	7 17
21	T	5 46	6 0	7 37	5 46	5 59	7 42	5 46	5 59	7 47
22	F	5 47	5 58	8 14	5 47	5 57	8 19	5 47	5 57	8 25
23	S	5 48	5 56	8 48	5 48	5 56	8 54	5 48	5 56	9 2
24	S	5 50	5 55	9 37	5 49	5 54	9 45	5 49	5 54	9 52
25	M	5 51	5 53	10 32	5 50	5 53	10 39	5 50	5 53	10 47
26	T	5 52	5 51	11 36	5 51	5 51	11 42	5 51	5 51	11 59
27	W	5 53	5 49	morn	5 52	5 49	morn	5 52	5 49	morn
28	T	5 54	5 47	0 41	5 53	5 48	0 46	5 53	5 48	0 52
29	F	5 55	5 46	1 48	5 54	5 46	1 52	5 54	5 46	1 56
30	S	5 56	5 44	2 51	5 55	5 45	2 54	5 55	5 45	2 57

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	O.	H. M.	H. M.	H. M.	H. M.	H. M.
Full M'n	3	4 29 ev.	4 17 ev.	4 5 ev.	3 53 ev.	5 23 ev.
3d Quart.	10	11 37 ev.	11 25 ev.	11 13 ev.	11 1 ev.	10 31 ev.
New M'n	17	5 10 ev.	4 58 ev.	4 56 ev.	4 31 ev.	4 4 ev.
1st Quart	25	7 19 mo.	7 7 mo.	6 55 mo	6 43 mo.	6 13 mo.

AMERICAN AGRICULTURIST.

NEW YORK, SEPTEMBER, 1876.

The results of the harvest season now nearly closed, show very clearly that the effects of the variableness of the seasons may be greatly modified by the farmer himself. In parts of the East, where a severe drouth has prevailed, and where the potato beetles have appeared in great numbers, those farmers have suffered most whose fields have been poor, or who have neglected those simple precautions by which others have saved their crops. In the West, where floods of rain have drenched the fields, it is the undrained lands that have suffered. Where liberal manuring, drainage, or careful cultivation has been done, the ill effects of drouth or excessive moisture have been mitigated. One more resource remains to be exercised, that is irrigation. Every successive year shows more and more conclusively that some practical means of utilizing the excess of the rainfall of a part of the year, during our almost certain dry season, would be of the greatest advantage. How we can best use the surplus of our wet months to relieve the necessities of the dry months, is a question that appeals to the interests of farmers, fruit growers, and gardeners.

Hints about Work.

Thrashing.—The dry weather of July and August over a large portion of the East, has brought the wheat and rye into a condition of ripeness that will much facilitate early thrashing. A large proportion of the grain was in the best condition for thrashing as it came from the field. Many of the best farmers now haul their grain direct from the field to the machine. A second handling is thus avoided, and the straw may go into the stack in a better condition, or into the barn direct. With our usually dry harvest season there seems to be no reason for this double handling, and none to prevent the thrashing of wheat, rye, or oats directly from the field. Our own experience is decidedly in favor of this practice.

Wheat or Rye.—Rye is little more than half the price of wheat. The chief reason why this crop is grown, is that the soil is too poor to bring a crop of wheat. To grow a bushel of rye costs just as much as to produce a bushel of wheat. Either the rye is grown at a loss, or the wheat at a large profit. The former is the fact. Why then should rye be grown, excepting in those rare cases in which the straw is in demand for various purposes, and in which the profit of the crop thus lies? Only because the method of farming is poor, and therefore unprofitable. As a help to change the system, we might suggest that the manure used to grow a few acres of rye, be used on half the number of acres of wheat, and the rest of the land be fallowed or sown to clover in the spring, as a means of renovation. But in some way wheat ought to take the place of rye in many districts where that is generally grown.

Seed Wheat.—To procure the largest ripest grains for seed, some sheaves may be thrown upon the barn floor in a deep bed, and partly thrashed with the flail, or by driving a pair of horses over them, without untying them. They may then be returned to the mow. This may seem like going back on machinery, and returning to by-gone fashions, but there are some things which can, and perhaps always will, be done best by hand, and this is one of them. Machine thrashed grain is so much cracked or broken, that a large proportion is unfit for seed, and especially when we have to buy seed at double prices, or even more, much is saved by procuring hand thrashed seed. In the way pointed out we get the ripest and largest grain, which makes the best seed.

Sowing the Seed.—How much seed per acre should be sown, is a question about which there are various opinions. It depends upon the kind of seed and the richness of the soil. It is pretty certain that a great deal of seed is wasted by over thick sowing. We have found one bushel per acre to produce more than five or six pecks upon similar ground, when sown early this month. But the soil was rich enough to yield 30 bushels per acre. Upon poorer ground this sowing would be too thin. If later sown more seed is needed. There is no question about the advantage of drill sowing over broadcast. To cover the seed by a common cultivator, is a good substitute for drill sowing. Where the ground is at all cloddy, rolling after sowing will be of advantage, otherwise we leave the surface rough.

Smut.—As a preventive against smut, it will pay to "pickle" the seed. Steeping in strong brine, lime water, or stale urine, for three hours, are found effective in many cases. Perhaps the best method of pickling seed, is to dissolve four ounces of blue stone (sulphate of copper) in one gallon of water, for every two bushels of seed. Heap the seed upon the barn floor, and sprinkle the solution over it; then mix thoroughly with the shovel until the moisture is spread evenly through the heap. Let it remain twelve hours, when the pickle will be absorbed, and the seed may be sown at once.

Fertilizers.—Where the soil has not been well-dressed with rich, rotted manure, some active fertilizer will be useful. Now that we can procure guano guaranteed as to quality, we would choose this for fall use before any other purchased fertilizer. Superphosphate is generally most effective when used in the spring. 150 lbs. of guano, costing about $4.50, per acre, would make a good dressing, to be harrowed in before sowing, or with the seed if it is sown broadcast.

Surface Draining.—When they are necessary, surface drains should be made as soon as the fields are sown, and not left until fall rains have come. Generally, to clear out the dead furrows on the higher parts of the field, and to make outlets from the lower parts, where surface water might accumulate, will be sufficient.

Grass Seed.—Timothy or orchard grass are better to be sown as soon as the wheat is drilled or covered, than in the spring. A peck of the former, or six pecks of the latter, is not too much if the grass alone is to be sown. If clover is to be sown in the spring, four to six quarts of the former, or a bushel of the latter would be a proper quantity per acre.

Grasslands.—Meadows and pastures may be top-dressed with advantage at any spare time during the month. Coarse manure had better be left in the yard to rot, but if any well rotted manure is on hand, it may be evenly spread, and the lumps broken by drawing a dull harrow or a log clod-crusher over it.

Clover Seed.—The high price of clover seed makes

it of advantage to save all that can be gathered. Five bushels of clover seed per acre may be saved, if it is made an object to do it. This is worth as much as an average crop of hay. The ground is not exhausted by it. By attaching a sheet-iron apron behind the cutter-bar, so that the rear part drags upon the ground, the heads may be gathered and raked into heaps by a boy following the machine. As the stalks are of little account for fodder, the clover may be exposed to the rain and wind without damage, and with advantage, as the seed will hull out better for it. It may be raked up when perfectly dry, and put under cover to be thrashed in the winter. It is difficult to keep it dry by any way of stacking it out of doors.

Cutting Corn.—The value of corn-stalks for fodder, is too often lost sight of in harvesting. To save the fodder as much as possible, the crop should be harvested as soon as the corn is glazed. After that nothing is gained by letting the crop stand, but much loss is risked by reason of storms or frosts. When the whole stalks are not cut, but only the tops above the ears, the fodder may be gathered soon after the first of this month. Binding in small sheaves is a good plan.

Sowing Corn-Stubble.—Where the practice of sowing the corn-stubble with wheat prevails, the unsightly method of leaving the strips upon which the corn has been shocked unsown, should be avoided, both on account of its ill appearance and its want of economy. A considerable amount of ground is wasted, and weeds are encouraged. It is not much trouble to haul off the shocks, as described on page 328, and set them up in some place where the corn can be husked conveniently, and what trouble there is in it is well repaid.

Corn Husking.—Many farmers are unaware that corn may be husked by machinery, and where a large crop is to be handled, the Philip's Spiral Corn Husker will be found a great help. Other helps for smaller growers, will be found in some greatly improved husking gloves that are now made. They are a protection against cold, and effective.

Winter Pasture.—In many places, in the Middle and Southern States for instance, a winter pasture is very convenient, if not necessary. Rye is generally sown for this purpose on fields intended for a spring crop, or the crop is left to grow after having been pastured. Three bushels of seed should be sown, and the earlier this month the better.

Winter Oats.—This crop is coming into favor in Southern States, and is being tested in the Middle States. It furnishes fall and winter pasture, or a heavier crop of grain than spring oats. Two bushels per acre should be sown early this month. The earlier it is sown the better.

Soiling Crops.—Rye is the first crop that can be used in the spring for soiling purposes. Those farmers or dairymen who intend to soil any of their stock, can best begin now by sowing a piece of rye for early green feed. The ground is cleared in time for oats and peas mixed, or fodder corn. To make soiling crops pay they must be richly manured, as much labor is involved in this method of feeding stock, and only heavy crops will pay for the labor.

Root Crops.—Forward crops of mangels or beets may be thinned now to help out the fall feed. The more room the leaves have to spread, the riper and more nutritious the roots will be.

Sheep.—The whole flock should now be well looked after. Sheep intended for market should be pushed forward as rapidly as possible. Ewes intended to produce early lambs should not be stinted upon stubbles and bare pastures, but should be supplied liberally with all the food they can digest. They may now be coupled with the ram. For market lambs the Merino ewe crossed with a Cotswold ram, is perhaps the best choice, giving large and rapidly growing lambs, which are easily fed and fatted. Experienced breeders have found no difficulty on account of the ram, nevertheless, a moderate sized, compact, heavy bodied ram is preferable to a lanky rangy animal.

Young Stock of all kinds should be prepared for winter. Get them in good condition before the cold weather arrives, or all is lost now that has been gained by the summer's feed. To keep them steadily growing at all seasons, is the secret of raising profitable animals.

Swine.—More improvement is noticable in swine than in any other stock, but unless improvement is kept up by the use of thorough-bred males, the stock will go back. As a primary principle in breeding, it may be said that a half-bred or grade male should never be used to produce stock. For a sow that produces ten young at once, it is the very poorest enonomy to breed her to a poor male, no stock pays better to improve than swine, on account of the rapid increase.

Agricultural Fairs.—Every farmer should make a point of attending his County Fair and the State Fair that he can most conveniently reach. It matters little whether it is that of his own or an adjoining State. When there the most of his time should be given to examining the stock and implements as a study. Their valuable points should be found and contrasted, and notes made of these with the names of the breeders or the manufacturers. To study the various things exhibited, as though every visitor was a judge, and was expected to render a decision, would be time well employed.

Work in the Horticultural Departments.

In many orchards this is the harvest month, and care taken with the trees will now be repaid in fruit. The proper treatment of trees from the time of planting to that of bearing has as much to do with the quality of the fruit, as the difference in soils and climates. If trees are planted in well-drained soil, and carefully pruned at the time, and the fruit thinned when they begin to bear, the same variety will be much finer, than where these points are neglected. September is also the "Fair" month, and every grower of fruits and vegetables should select his best specimens of each for the neighboring fair, and if he can exhibit at the larger State and horticultural exhibitions, all the better. Marketing will occupy the attention of the gardener, and the hints given in last month's notes should be heeded. The fruit crop is so large generally, though there are localities with poor crops, that unless unusual care is taken in assorting and packing, poor returns will be realized. The laying of drains should not be postponed later than this month, as the fall rains will hinder the work.

Orchard and Nursery.

Peaches.—Gather for market before they begin to soften, as one soft peach will spoil a basket or crate. See that they are carefully assorted, and handled as little as possible.

Pears.—Never shake the fruit from the trees, but hand-pick always. All pears are better when ripened off of the tree. A little practice will enable one to pick at just the right time, so that they will be in eating condition soon after they reach the consumer. New half-barrels, lined with white paper, are the best packages for choice selected pears.

Apples.—Assort, and market only the good ones; poor apples will pay best in the form of vinegar.

Budding may still be done, as recommended last month. Label each sort carefully.

Drying.—Make ample provisions for drying the surplus fruits of all kinds; it is likely that only the best fruit will bring remunerative prices this season.

Cider and Vinegar.—See that all inferior fruit is gathered and made into cider, before it has a chance to decay, rejecting all that is partially decayed.

Seeds.—Gather stones of peaches and plums for raising stocks, and preserve in boxes of sand, where they will be kept cool. Collect seeds of all trees which it is desirable to propagate, as fast as they ripen, and sow those sorts at once, which will not keep, and preserve the rest in a cool place until spring.

Planting.—All land intended for fall planting should be plowed and harrowed, and put into proper condition for setting out trees; if possible, give a good dressing of ashes or ground bone. Stake out the ground ready for planting later in the fall. In northern localities it is better to plow the land, and allow it to remain until spring; purchase the trees this fall, and heel them in, to be ready for setting in spring.

Seed-Beds of fruit and ornamental trees must be weeded often, else the tenacious fall weeds will render the work almost impossible, without rooting out the young trees with the weeds.

Fruit Garden.

Most of the fruits cultivated in this department, except grapes, will have been already gathered, and the main work will be to take such care of the plants, as will secure an abundant crop next year.

Raspberries.—Cut away the old canes that have fruited, and burn. Tie up the new growth to stakes or other support, allowing only four or five canes to each plant; shorten these to about 4 feet, and the laterals at 18 inches. It is well to give the rows a dressing of manure, leaving it on all winter.

Blackberries.—Cut out the canes which have fruited, and tie up the new ones; do not let them grow over 5 or 6 feet high, and keep the laterals to 18 in.

Grapes.—Mildew sometimes appears just as the fruit is about to color; when this happens, dust freely with sulphur, and trust to the rains to wash it off before the fruit is gathered. In picking for market, do not handle the bunches; scissors are made, which hold the bunch after cutting it.

Currants and Gooseberries.—Apply manure to the surface to fertilize and mulch. If no manure is used, put on a mulch of litter.

Dwarf Trees.—Gather the fruit from these as fast as it matures. Do not allow pears to mellow on the trees, but when the stem parts readily from the tree, pick and lay away on shelves in a cool fruit-room, to color and ripen.

Kitchen Garden.

Asparagus.—If any seeds are needed, gather and allow them to ripen. When the foliage begins to turn yellow, cut and burn the old stalks. Give the bed a liberal coat of manure, which should be left on until spring,

Beets.—Keep the late crops hoed, and cultivate between the rows often, until the tops prevent. Sow a few early this month for late greens.

Beans.—Hoe and cultivate as often as necessary to keep down the weeds. Gather Limas, and pick and salt down late string beans.

Celery should now be growing finely, and care must be taken to keep down the weeds. Towards the end of the month draw the earth up to the plants; do not allow any to get into the center.

Cabbage and Cauliflower.—Hoe late crops often, sowing a little guano between the rows before hoeing, and water occasionally with liquid manure.

Corn.—Save a few ears of the earliest and best shaped for seed. Cut the stalks from the early crop and dry for fodder. Dry a quantity of green corn for winter use.

Cucumbers.—Gather pickles every other day, useing none over three inches long. The ripe fruit may be made into sweet pickle or cucumber catsup.

Lettuce.—Sow a few rows for fall use in a cool place.

Manure.—Make all the manure possible, by saving house-slops, washing water, and all weeds which have not ripened their seeds; turn and mix thoroughly the manure occasionally, so that it will rot rapidly.

Martynias.—Gather the young tender fruit every few days, and put into brine, the same as cucumbers.

Melons.—Turn occasionally, to ripen them evenly.

Onions.—Gather and store in a cool, dry place, after the tops have fallen over.

Seeds.—Save and label as fast as they ripen, and take care to put them where mice cannot reach them.

Spinach.—Sow for fall use this month, and hoe as soon as up.

Sweet Potatoes.—Move the vines occasionally to keep them from rooting. A few of the largest may be taken out for use, and the rest left to grow.

Tomatoes.—Destroy the large green worm which eats the leaves. Before the frost comes gather a quantity of green ones for pickling.

Turnips.—Hoe and thin the late sown crops, and

keep the others cultivated until the tops cover the ground. Sow seeds of the flat kinds in any vacant spots, and if the fall is moderately long, a fair crop may be expected.

Weeds.—Allow none to go to seed. Use the cultivator wherever it will save hand labor. Let no weeds run to seed along the fence rows, as these soon fill the ground with seeds.

Flower Garden and Lawn.

The fall rains will in most places have started the grass and flowers into fresh growth, and the garden should now be in the glory of its late bloom.

Lawn.—Mow every week or so to keep down annual weeds. If there are any spots in which the grass has been killed by drouths, sow grass seed, if possible just before a shower, or mend with sods.

Chrysanthemums.—A few of the best varieties should be taken up and potted for blooming in the house, giving them a few days shading. Tie up any that require it.

Cuttings.—Provide a stock of cuttings of plants for winter flowering. Shade the cutting bed from the sun during hot days.

Dahlias should now look their best, and must be kept tied up carefully to stakes, else they will be broken by the wind.

Walks.—Keep free from weeds; rake and roll. Cut the margins with an edging knife, and keep the grass roots from entering the walks.

Perennial Plants.—Keep down the weeds and save seeds of such as are wanted as fast as they ripen.

Insects.—Remove and burn all late caterpillars which infest shrubs and ornamental trees.

Greenhouse and Window Plants.

The general overhauling and cleaning of the greenhouse should be over, so that tender plants, which have been out during the summer, may be taken in at any time.

Glazing should be done, and if the glass is not perfectly tight, give the sash bars a coat of thick lead paint, to close up all cracks.

Pots.—Have a plenty on hand for all plants which are to be taken in. Wash and clean all which require it, as it is a bad practice to put plants into dirty pots.

Hanging Baskets may now be refilled and set in the shade for a few days, and then removed to the house or greenhouse.

Propagation.—Make cuttings of all bedding and greenhouse plants which it is desirable to have a stock of, and take care not to allow the air to blow over the cutting bed, as this soon dries out the sand.

Commercial Matters—Market Prices.

Gold has been up to 112⅜, and down to 111⅜, closing Aug. 12, at 111¼, as against 111⅞ on July 12, and 112¾ on May 13 ...The movements in the Breadstuff line have been on a restricted scale. The export inquiry for supplies has been comparatively moderate; the foreign advices having been, as a whole, unfavorable to free purchases for shipment. The home trade demand has been fair, but not urgent. Supplies have been offered with freedom, particularly Grain "out of order," which, in the instance of Spring Wheat especially, constituted the bulk of the available stock here. The oppressively warm weather in July very seriously damaged the Grain accumulation here; and also injured the stock Flour considerably. Strictly prime Wheat, Corn, and Oats have been comparatively scarce. Prices have been quite variable, during the month, closing weak for Flour, Wheat, and Rye; and firm for Corn and Oats. New Winter Wheat Flour, and new Winter Wheat, and new Oats have been arriving more freely, and have been selling quite readily on arrival at relatively full prices. The new Oats, which have thus far come to hand, have been mostly very light and poor. The new Winter Wheat, particularly new amber, has been of excellent quality, as a rule. New crop State Barley is now offering here by sample for late September arrival. The samples appear to be of light weight, but otherwise of very good quality and color. Of Flour, the favorite brands with home trade buyers have been Minnesota extras, straight, and patent, which have been sold with promptness and close up to production. On Thursday, August 10, a sample of new crop Minnesota Spring was exhibited at the Produce Exchange. It was, as to berry, very hard and sound, and deemed much superior to last year's crop. Thus far the new crop of Spring in Minnesota has been harvested in fine condition. The weather has not only been generally fine, but great care has been exercised in handling. After last year's severe experience, northwestern farmers are far more cautious than ever before, and have adopted the rule of "stacking as they go along." All reports seem to agree that the yield is below the average of the last two heavy crops, but opinions differ as to the extent of the deficiency, the range being from 15 to 30 per cent in various sections. The sample shown here to-day will test *at least* 60 lbs. per bushel.... Provisions have been active, but, in the leading items, unsettled in price....Wool has been in more demand for manufacturing purposes, closing more firmly, on less urgent offerings....Cotton has been freely dealt in, and has advanced....Tobacco, Hay, Straw, Hops, Naval Stores, and Petroleum have been more sought after, and have shown more steadiness as to values toward the close .. Ocean Grain freights have been moderately active, closing firmly. Grain rates by steam to Liverpool, closed on the 12th Aug. at 9*d*; to Glasgow at 9*d*; to London at 7½@8*d*; to Liverpool, by sail, at 8@8½*d*; London, by sail, at 7½*d*. per bushel. Provisions by steam to Liverpool, 40*s*.@55*s*. per ton; Cotton at 5/16@⅜*d*. ℔ lb. Grain tonnage for Cork and orders, at 6*s*.@6*s*.3*d*. per quarter. Grain rates from San Francisco to Liverpool, quoted at 65*s*.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Aug. 14th, 1876, and for the corresponding month last year:

CURRENT WHOLESALE PRICES.

	July 13.	Aug. 14.
PRICE OF GOLD	111 7-8	111 1-2
FLOUR—Super to Extra State	$3 25 @ 5 30	$3 65 @ 5 25
Super to Extra Southern	3 35 @ 8 75	3 65 @ 8 50
Extra Western	4 25 @ 9 50	4 40 @ 9 25
Extra Genesee	5 80 @ 6 75	5 25 @ 6 50
Superfine Western	3 40 @ 4 00	3 65 @ 4 35
RYE FLOUR	3 50 @ 5 15	2 75 @ 5 15
CORN-MEAL	2 60 @ 3 35	2 60 @ 3 25
WHEAT—All kinds of White	1 20 @ 1 45	1 20 @ 1 35
All kinds of Red and Amber	80 @ 1 28	70 @ 1 30
CORN—Yellow	55½@ 60	57 @ 61
Mixed	47 @ 57	48 @ 58½
White	56 @ 62	56 @ 63
OATS—Western	30 @ 43	26 @ 45
State	37 @ 44	39 @ 48
RYE	72 @ 88	60 @ 76
BARLEY	Nominal.	Nominal.
HAY—Bale, ℔ 100 lbs	60 @ 1 00	55 @ 95
STRAW, ℔ 100 lbs	60 @ 1 15	45 @ 95
COTTON—Middlings, ℔ lb	11¾@ 11⅞	12⅜@ 12½
HOPS—Crop of 1875, ℔ lb	10 @ 17	10 @ 20
" new, ℔ lb	— @ —	— @ 30
FEATHERS—Live Geese, ℔ lb	30 @ 60	30 @ 60
SEED—Clover, ℔ lb	Nominal.	16 @ 16½
Timothy, ℔ bushel	2 70 @ 2 90	2 75 @ 2 90
Flax, ℔ bushel	1 50 @ —	1 40 @ 1 42½
SUGAR—Reh'g & Grocery ℔ lb	7¼@ 9½	7⅞@ 10¼
MOLASSES, Cuba, ℔ gal	28 @ 38	30 @ 42
New Orleans, new crop, ℔ gal	45 @ 60	47½@ 60
COFFEE—Rio (Gold)	15¼@ 18¼	14¾@ 17¾
TOBACCO, Kentucky, &c., ℔ lb	6 @ 25	6 @ 25
Seed Leaf, ℔ lb	5 @ 35	5 @ 25
WOOL—Domestic Fleece, ℔ lb	38 @ 40	38 @ 40
Domestic, pulled, ℔ lb	16 @ 35	16 @ 35
California, clip	10 @ 25	10 @ 25
TALLOW, ℔ lb	8¼@ 8¾	8⅜@ 8⅞
OIL-CAKE—℔ ton	36 50 @39 50	38 00 @39 50
PORK—Mess, ℔ barrel	— @20 00	— @19 40
Prime Mess, ℔ barrel	19 00 @19 50	— @ —
BEEF—Plain mess	10 00 @11 00	9 00 @11 00
LARD, in trcs. & bbls, ℔ 100 lb	11 00 @11 25	11 00 @11 15
BUTTER—State, ℔ lb	15 @ 26	16 @ 30
Western, poor to fancy, ℔ lb	12 @ 24	14 @ 27
CHEESE	4 @ 10¼	3 @ 9¾
BEANS—℔ bushel	40 @ 1 40	50 @ 1 50
PEAS—Canada, in bond, ℔ bu	— @ 99	96 @ 98
EGGS—Fresh, ℔ dozen	14½@ 18	15 @ 20½
POULTRY—Fowls	13 @ 18	12 @ 16
Turkeys—℔ lb	13 @ 18	13 @ 17
Geese, ℔ pair	1 25 @ 2 50	1 25 @ 1 75
Ducks, ℔ pair	60 @ 1 12½	56 @ 1 00
Roosters, ℔ lb	8 @ 10	— @ —
Chickens, dry pick'd ℔	20 @ 33	16 @ 25
WOODCOCK, ℔ pair	— @ —	75 @ 90
PIGEONS, wild, ℔ dozen	90 @ 1 37½	— @ —
" tame, ℔ dozen	1 50 @ 1 75	1 00 @ 1 25
CUCUMBERS, ℔ 100	— @ —	37 @ 50
TURNIPS ℔ bbl	— @ —	2 00 @ 2 50
CABBAGES—℔ 100	5 00 @ 8 00	5 00 @ 8 00
ONIONS—℔ bbl	— @ —	2 50 @ 3 00
POTATOES—New ℔ bbl	2 00 @ 4 50	2 00 @ 3 50
SWEET POTATOES—℔ bbl	— @ —	3 00 @ 6 00
BROOM-CORN	3 @ 10	3 @ 9
WATERMELONS, ℔ 100	25 00 @50 00	15 00 @30 00
GREEN PEAS, ℔ bush	— @ —	1 00 @ 1 15
TOMATOES, ℔ bush	— @ —	87½@ 1 25
BEETS, ℔ 100 bunches	— @ —	2 50 @ 3 00
EGG PLANTS, ℔ doz	— @ —	90 @ 1 25
GREEN CORN, ℔ 100	— @ —	75 @ 1 00
NUTMEG MELONS, ℔ bbl	— @ —	2 00 @ 2 50
APPLES—℔ barrel	1 50 @ 3 50	75 @ 2 00
SQUASH, ℔ bbl	— @ —	2 00 @ 3 00
PEARS, ℔ bbl	— @ —	1 50 @ 5 00
PEARS, ℔ box	— @ —	4 00 @ 6 00
PEACHES, ℔ basket	— @ —	25 @ 2 00
PLUMS, ℔ box	— @ —	3 00 @ 5 00
BLACKBERRIES, ℔ qt	3 @ 15	3 @ 12
GRAPES, ℔ lb	— @ —	6 @ 9
WHORTLEBERRIES, ℔ bush	2 00 @ 3 50	75 @ 1 50
MAPLE SUGAR, ℔ lb	6 @ 10	— @ —
MAPLE SYRUP, ℔ gallon	70 @ 1 00	— @ —

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
26 d's *this* m'th	305,000	2,451,000	2,060,100	112,000	65,000	1,015,000
24 d's *last* m'th	331,000	4,937,000	2,405,000	239,000	141,000	1,216,000
SALES.	**Flour.**	**Wheat.**	**Corn.**	**Rye.**	**Barley.**	**Oats.**
26 d's *this* m'th	412,000	2,634,000	2,107,000	39,000	—	1,104,000
24 d's *last* m'th	363,000	2,376,000	2,613,000	143,000	—	986,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
26 days 1876	305,000	2,451,500	2,060,100	112,000	65,000	1,015,000
27 days 1875	361,000	4,117,000	1,984,000	21,000	—	411,000
SALES.	**Flour.**	**Wheat.**	**Corn.**	**Rye.**	**Barley.**	**Oats.**
26 days 1876	412,000	2,634,000	3,107,000	39,000	—	1,104,000
27 days 1875	497,000	8,711,000	3,105,000	49,000	84,000	1,604,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
Aug. 7, 1876	2,831,299	904,557	94,960	53,914	1,232,895	434,208
July 10, 1876	2,189,729	296,727	61,508	15,675	1,014,047	482,009
June 9, 1876	1,121,293	625,848	3,969	15,674	885,042	507,157
May 8, 1876	1,563,826	172,090	16,365	33,301	437,387	450,643
Apr. 10, 1876	3,393,074	232,140	68,429	200,381	706,282	436,942
Mar. 6, 1876	4,473,653	302,026	82,562	441,078	757,457	377,278
Jan. 10, 1876	5,802,293	663,982	100,741	325,191	1,080,300	307,438
Dec. 7, 1875	5,878,036	816,962	99,908	305,961	1,252,005	258,364
May 11, 1875	969,804	1,542,924	16,124	16,537	545,209	229,655
Jan. 11, 1875	3,655,122	1,049,900	50,889	191,470	877,014	145,647

4. *Exports from New York. Jan. 1. to July 12.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Peas. bush.
1876	1,164,721	17,555,570	8,844,000	691,000	28,100	362,000	455,987
1875	1,129,041	14,650,208	7,225,590	120,163	165	73,147	229,589
1874	1,365,480	23,290,750	14,513,411	531,001	320	72,311	263,883
1873	791,998	9,278,612	7,669,335	327,970	19,226	20,839	92,496
1872	547,794	5,179,949	14,572,323	510,678	22,666	29,706	123,693
1871	1,095,079	10,556,653	6,341,032	71,399	81,797	16,764	—
1870	1,069,227	10,236,257	220,647	65,734	—	11,205	—
1869	812,764	9,099,803	1,537,077	72,811	—	42,797	—
1868	575,091	3,209,201	4,903,872	158,073	—	40,643	—

5. *Tide-water Receipts at Albany, from opening of navigation to July 1:*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
1876	13,700	7,597,500	2,565,000	327,000	114,500	1,791,200	365,500
1875	27,200	7,501,600	1,932,200	68,700	—	1,023,200	456,500
1874	35,100	11,590,000	9,795,200	189,800	74,100	1,216,700	356,300

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.	Tot'l.
July 17	9,231	91	3,730	31,727	20,417	65,196
July 24	9,439	85	2,718	20,060	21,832	54,134
July 31	10,259	93	3,115	31,021	17,564	62,052
Aug. 7	11,440	148	3,548	30,570	21,382	67,088
Aug. 14	8,988	86	2,750	28,243	19,603	59,570
Total for 5 Weeks	49,347	503	15,861	141,621	100,798	308,140
do. *for prev. 4 Weeks*	34,931	234	12,575	95,911	79,595	253,246
	Beeves.	**Cows.**	**Calves.**	**Sheep.**	**Swine.**	
Average per Week	9,871	100	3,172	28,324	20,159	
do. do. *last Month*	8,732	53	3,144	23,980	19,898	
do. do. *prev's Month*	9,264	60	4,838	24,291	22,224	

Beeves.—The crowded condition of the market during the past month, along with the moderate demand, has resulted in reducing prices considerably. No class of stock has held its own but extra beeves of 1,500 lbs., and of these over 2,000 head, or an average of 400 per week, have been shipped to England. Ordinary stock has had no such mode of relief, and has given way, as shown in our record of prices. The Texas drive of this season is now estimated at 311,390 head, which is larger than usual. Colorado beeves have made their first appearance this season, selling at 7¾@8c. ℔ lb., 55 lbs. to gross cwt. The market closes at the lowest rates of the past 10 years. Cherokees sold at 6¾c. ℔ lb., for 54 lbs. to the cwt.; Natives at 7¼@7½c. for poor, 8¼@8¾c. for ordinary; 9@9½c. for medium, and 9¼@9¾c. for good cattle; extra cattle of 57 lbs. to the cwt. were scarce, and sold for 10¼@10½c. ℔ lb.

The prices for the past five weeks were as follows:

WEEK ENDING	Range.	Large Sales.	Aver.
July 17	8 @10½c.	9¼@10¼c.	9½c.
July 24	8¼@10¾c.	9¼@10¼c.	9¾c.
July 31	7½@10¾c.	8 @10½c.	9½c.
Aug. 7	6½@10½c.	7½@ 9½c.	9 c.
Aug. 14	6¼@10½c.	6¼@ 9¼c.	8¾c.

Cows.—Poor cows that have been rushed in for sale, have helped to reduce prices $5 to $8 per head the past month. While good cows sell readily, yet on the whole, these being scarce, the business has been dull, and rates at the close were from $40 to $80 per head for extremes either way.....**Calves.**—There has been a glut of veals, and sales have been made of grass calves at $5 to $6 per head, for 180 to 190 lbs. Milk veals sold at the close of our report at 5¾@6¾c. ℔ lb. live weight for poor, and 7@ 8c. ℔ lb. for good; really prime brought 8½c.....

Sheep and Lambs.—This stock has felt the effect of over-supplies as well as other kinds, and poor qualities have sold as low as 3c. ℔ lb. live weight. Better sheep have sold for 4½c., and good at 5½c.; the best bringing 5¾@5c. ℔ lb. Lambs have sold for 7c. to 8c. ℔ lb., the best Jersey bringing 8½c. As we close there is no change to be noticed....**Swine.**—For hogs the market has been quiet, with an advance early in the month, and a gradual decline since then. The demand is weak, and closing prices may be quoted at 7¾@8¼ ℔ lb. for city dressed, and $6.80@$7 ℔ 100 lbs. for fair to good live hogs

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton	$56.50
do. do. guaranteed, ℔ ton	56.00
do do. rectified, per ton	61.50
Mapes' Nitrogenized Superphosphate, per ton	45.00@ 50.00
" Plain Superphosphate (mineral), per ton	30.00@ 35.00
" Bone Superphosphate, per ton	40.00@ 45.00
" Prepared Fish Guano, per ton	35.00@ 40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton	40.00
" " Dry ground Fish Guano, ton	45.00
" " Pine Island Guano, per ton	45.00
Fish Guano (crude in barrels), per ton	24.00
Bone Black, per ton	25.00@ 28.00
Bone Flour, per ton	40.00@ 45.00
Rawbones Ground (pure), per ton	33.00@ 40.00
Rough Bones, per ton	22.00@ 25.00
German Potash Salts, (25@35 per cent), per ton	20.00@ 25.00
Gypsum, Nova Scotia, ground, per ton	8.00@ 9.00
" In barrels, per bbl	1.25
Wood Ashes, per bushel	16 c.@18 c.
Nitrate of Potash (95 per cent.), per lb	8½c.@ 9 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2¾c.@ 3¼c.
Nitrate of Soda, per lb	4 c.@ 4½c.
Sulphate of Ammonia (25 per cent.), per lb	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia	$3.00@ $ 4.00

September 1st, 1876.

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                A   MM MM EEE RRR  II  CCC   A   NN N
               AA   MMMM E   R  R  II C  C  AA   NNN
              A A   M MM M EE  RRR  II C     AA  NNN
             AAA    M MM M E   R  R  II C  C AAA  N NN
            A   A   M  M  M EEE R  R II  CCC A   A N NN

A   GGG  RRR  II  CCC  U  U  L     TTTTT  U  U  RRR  II  SSSS  TTTTT
AA  G  G R  R II C  C U  U  L       T    U  U  R  R II S    S    T
A A G    RRR  II C    U  U  L       T    U  U  RRR  II  SSSS    T
AAA G GG R  R II C  C U  U  L       T    U  U  R  R II      S    T
A  A GGG R  R II CCC  UU   LLLL     T     UU   R  R II SSSS     T
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For 1877.

To Our Old Friends and Readers.

The Publishers of this Journal have received from so many of those who for a longer or shorter time have been among its readers, expressions of great interest in and satisfaction with the *American Agriculturist*, that they have felt at liberty to ask of all such old friends and readers a **SPECIAL FAVOR** to wit:

☞ Please tell all your friends and neighbors, ☜ who are not at present subscribers to this paper, that every person sending in his subscription during the month of September, 1876, ☜ for the American Agriculturist for 1877, will ☜ not only receive this Journal for all of 1877, ☜ (Vol. 36 complete), but will also be presented with ☜ it all the rest of this year, **FREE OF CHARGE.** ☜

Those subscribing in September will thus get the paper **Fifteen Months**, or **Three Months Extra**, for only a single year's subscription. The above applies to **all** subscribers, at single, or club rates.

TERMS: { From reception of subscription to the End of 1877:

[*Postage in all cases paid by the Publishers.*]

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Twenty Copies and Upwards	1.10 each.

N. B.—Clubs of four or more copies, if sent by the same person as members of one club, may be mailed to different post-offices. The name of every subscriber will be put upon his paper, whether in a club or not.

We hardly need remind those who have long been familiar with this Journal, that in calling the attention of friends to it, they can affirm without hesitation that, when the large expense involved in providing its **interesting and varied reading matter**, and its great number of **superb illustrations**, is considered, it is the

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Our National BAZAAR this month, contains the usual assortment of good things, advertised by trustworthy men. It will always pay any one to look all through the advertisements, and see what is offered, by whom, at what price, etc. Many a man has got a valuable new idea from seeing what others say about business matters, which has started his own thought in a profitable direction. When writing to any of our advertisers, for information, catalogues, etc., or sending orders to them, please let them know that you belong to the great *Agriculturist* family, and you may expect and will receive good treatment. Our advertisers know that we carefully exclude any one who does not promptly perform what he promises in his advertisement.

Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

The Fair List.—Our list of State, County, and other fairs will be found on page 355. Contrary to expectations, the list is nearly as full as usual; we expected that the great Centennial Exhibition would so overshadow others, that many societies, especially those comparatively near Philadelphia, would omit their fairs for the present year. We are glad to find that this is not the case. Notwithstanding the thousands that will visit the great fair, they form but a small proportion of the whole population, and we are glad that those who are unable to attend the Centennial, will have their instruction and recreation provided for their local fairs. Every man, woman, and child that is old enough to profit by it, should attend one or more of these gatherings. Do not omit to show *something*, if only a single article; recollect that fairs must have exhibitors as well as spectators.

Standard Gooseberries and Currants.—In an article describing these interesting horticultural novelties, on p. 341, we omitted to notice another instance of their successful cultivation. In July we received from Mr. Henry Schmidt, Weehawken, N. J.,

two boxes, containing specimens of six choice varieties of European gooseberries, which were grown upon standard bushes of the kind described in the article referred to. The fruit was of large size, thoroughly perfect, and presented a sight seldom seen in this country. —We learn that Mr. S. received his plants several years ago from an importation by Dr. Siedhof, and he is greatly pleased with his success. The specimens on the Centennial grounds are unfortunately placed just outside of the current of travel, and are likely to escape notice. A path leads from the rear steps of the Horticultural building directly to the German restaurant. The bed of standard gooseberries and currants is upon one path further to the right, towards the boundary fence. Though the fruit has long been gone, an inspection of the plants can not fail to gratify all interested in such matters.

Evergreens at Auction.—S. B. Parsons & Sons, of Flushing, L.I., sent a few hundred choice specimens of the rarer kinds of Conifers, to the auction rooms of Messrs. Young & Elliott, in Courtlandt st., and they were sold on August 8th. Although the company of buyers was not large, they showed their confidence in the opinion of Messrs. Parsons, that "this season was the most suitable for transplanting conifers," by purchasing all offered at prices that must have been very satisfactory to the owners.

The Wakefield Earth Closet Co. —We regret having to say that the Wakefield Earth Closet Company, who in months past have advertised their useful manufactures in the columns of this journal, have been compelled by financial embarrassments to suspend payments.

Dederick & Co. Hay Presses.—Only last month we noticed the destruction by fire of A. B. Farquhar's Agricultural Works at York, Pa., and we now have to record a similar casualty to the works of P. K. Dederick & Co., Albany, N. Y., makers of the celebrated hay presses bearing their name. As in the former case, the news of the disaster is accompanied by the statement that "we are now busy rebuilding." Messrs. D. & Co. give us the dimensions of four large brick and several frame buildings, which are going up to replace the old ones. The fire does not stop their business, as they are going on under temporary sheds, and wherever they can find shelter, to fill their orders as fast as possible. There is an admirable spirit among the manufacturers of agricultural implements, and they seem to take disaster as a matter of course.

Ropp's Commercial Calculator, is the title of a work by C. Ropp, Jr., Bloomington, Ill., intended for the use of farmers, mechanics, and others who need to use tables and rapid methods of arriving at values and quantities. Thus one can find at a glance the value of any number of bushels of wheat or other grain, at a given price, wages for a given time, interest at various rates, etc. It has received the endorsement of eminent mathematicians, and appears to be an exceedingly complete work. Sent by mail for $1.

What Dom Pedro Saw.—It would be difficult to say what this much sight-seeing monarch did not see during his visit to this country. At the Centennial Exhibition he saw the Boynton Lightning Saw, run by two men, saw a log of wood a foot in diameter in seven seconds. The emperor remarked that it was "fast, very fast." Had he been better versed in English, he might have said: "Of all the saws that I ever saw saw, I never saw a saw saw as that saw saws."

Pomologists this Month.—Every fruit-grower should bear in mind that the great exhibition of fruits comes off at the Centennial this month, from the 11th to the 16th. Some of the leading societies are taking measures to exhibit, and each individual fruit-grower should aid This can be, and should be, the greatest fruit-show the world has ever seen. Articles for exhibition should be delivered, free of charge, to Burnett Landreth, Chief of Bureau of Agriculture, Centennial Exhibition, Philadelphia. A special annex has been erected, and plates and all other facilities for showing the fruit will be provided. We in a former article expressed our regret that the Pennsylvania Horticultural Society should hold a rival exhibition at the same time. We have since learned that there are valid reasons why this Society should hold their usual exhibition, but that at the same time it will co-operate with, and the members contribute to the Centennial show. We are glad that this seeming obstacle is removed, now let us all pull together.—*Members of the American Pomological Society* will recollect that they are invited to accept the hospitalities of the Pennsylvania Society on one evening during the exhibition. Of course, every member of the Pomological Society, who intends to visit the Centennial, will do so at the time of the exhibition of Pomological Products. Col. Wilder and the rest of the *boys* from Massachusetts are expected.

Agricultural Engineer.—Otto Sackersdorff, Esq., who has long been known to us as standing high in his profession as an engineer, proposes to give especial attention to farm drainage and other agricultural operations where professional skill is required.

Board at the Centennial.—We learn that Rev. E. M. Long, S. E. Corner of 12th and Berks Sts., Philadelphia, is providing in select private families, "good sleeping apartments, with the best of board, at much lower rates than is asked by ordinary boarding-houses and hotels, or $5 to $14 per week" We understand that this is designed more especially for ministers and Christian families, but have not time to ascertain particulars before going to press. Those desiring, can obtain information by addressing Mr. Long as above.

Grapes in Missouri.—Messrs. Bush, Son & Meissner, Bushberg, Mo., in sending their very full price list of vines, write us that their fruit, which set very full, was badly damaged by rot in June. They had made arrangements to show 80 varieties at the Centennial, but with most of them the fruit is entirely destroyed. Ives and Perkins mostly escaped. Norton's Virginia, and Cynthiana have good crops, and Elvira, a new variety, of which they have great expectations, suffered only partially.

Mr. Ricketts' Grapes.—Mr. J. H. Ricketts, whose wonderful success with seedling grapes we have before mentioned, informs us that his prospects for a crop are very fine. He will be glad to show his seedlings to all those interested in grape culture, who will visit his garden at Newburgh, N. Y.

The New York Horticultural Society.—The Fall Exhibition begins on September 19th, and lasts four days, at Gilmore's Garden, formerly known as the Hippodrome. To judge from the spring show, a fine display may be expected.

Breeding Rabbits.—Our friend C. will excuse us if we make use of his request as an example of a class of very puzzling questions. He writes: that he has had "poor luck with his rabbits," and "would like a few hints in your Basket Items. Please reply in your next No."—We have many queries quite as indefinite as this, and no doubt many good people feel neglected because they get no reply. The only way to answer this is, to write a full treatise on rabbit breeding, in the hope that something in it might meet the case. The only definite statement is that our friend has "poor luck," for which we know of no special remedy. If our friend will state in what particular he fails, we will try to help him. At present, being quite in the dark as to the trouble, we can not suggest a remedy.

A Self-Adjusting Watch-Key is a small affair upon which to build a large business, yet Mr. J. S. Birch, whose key we have before noticed, informs us that his business has so increased, especially from foreign orders, that in order to secure sufficient room, he has removed to 38 Dey St., New York City.

$1.60 Will Pay for this Journal from *now*, away on to the *end* of 1877, delivered free of postage! Is not that cheap enough. The **700** or more, beautiful, and instructive engravings would alone be cheap at that price; but there will be over **1,300 Columns** of good original reading matter, useful and instructive—the very best that can be possibly obtained——all for $1.60, postage included. (See page 325.)

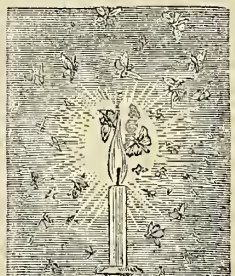
$1.35 will pay for all the above, when four persons unite and send $5.40 for the four. Please tell your non-reading neighbors!

Book on Farm Crops.—"G. T. G.," Fort Smith, Ark. The best book that treats of farm crops is L. F. Allen's New American Farm Book, price $2.50, sent postage paid from this office.

A Horrible Weed!—"A. W.," Columbus City, Iowa. The "Horse Nettle," so called, though not related to the nettles, but to the potato, its botanical name being *Solanum Carolinense.* This is probably the very worst weed in the country, and more to be dreaded than the Canada Thistle. "It occupies about two rods in length of the road," says our correspondent. If a catamount, a bear, or even a den of rattle-snakes, were known to be near Columbus City, what an excitement there would be, and the neighbors would not rest until the enemy was killed. Here is something worse than all these, and all hands should work for its destruction. It is the toughest of all weeds to kill, but repeated and persistent cutting will destroy it in time. Do not, as you value your farms, let a seed ripen. The county had better pay $5,000 for the destruction of this patch, than to have it spread. When this is once fairly established on a farm, the farmer must leave. We have not before heard of this in a locality so far north, and probably the season is not long enough for it to perfect its seeds, or it would long ago have left the road for the fields. We have seen farms in Delaware and south of that, rendered absolutely untenantable by this worst of weeds. There should not be a stem or a leaf of the plant visible in 24 hours after this paper reaches Columbus City. Destroy this weed at whatever cost.

A Powerful Team at Mowing.—According to the Reading (Pa.) "Eagle," Adam L. Fisher, of Marion township, engaged the services of *eight brothers* at mowing oats in a thirty-two acre field. Below we give the name, age, and hight, of each of the brothers: Benjamin Heffinger, 41 years old, hight 6 feet 1½ inches; George, 38 years old, hight 5 feet 11 inches; John, 35 years old, hight 6 feet; William, 30 years old, hight 5 feet 11½ inches; Franklin, 26 years old, hight 5 feet 11½ inches; Daniel, 24 years old, hight 5 feet 11½ inches; Pearse, 23 years old, hight 6 feet 1½ inches; Gabriel, 19 years old, hight 5 feet 11½ inches. Here were 48 feet of brothers, the eight averaging six feet in hight, all sound in health! They mowed the thirty-two acres of oats in one day, which is an average of four acres to the man. They all live in Marion township, the furthest within an hour's walk of Mr. Fisher's.

Sundry Humbugs.



Swindlers are not always after small game, some try their hand upon business men and capitalists. A gentleman who had been engaged in numerous enterprises, not long ago received a letter informing him that the writer had discovered that said gentleman was owner of ten shares in the stock of a certain mining concern, which, instead of being valueless as had been supposed, was really worth a considerable sum, and the writer would secure this, but of course needed some money advanced to pay traveling and other expenses. The only attention paid to the letter was to send it to us, with the note that the recipient never owned any such stock. This seems about as stupid an attempt at raising the wind as could be devised, and no more likely to work than

THE HOTEL DODGE,

which was very common a few years ago, and now has been revived. This is usually tried upon persons living at a distance, especially at the South. A letter is received from the proprietor of some hotel in New York, stating that so and so arrived at that hotel on a given date, and a week or two later died very suddenly. Upon examining the effects of the deceased, letters are found showing that he is a relative of the person to whom the letter is sent. The trunk contains several new suits of clothing, gold watch, diamond studs, silver-mounted revolver, etc., all of which will be forwarded by express, provided said relative will forward the small amount of the unpaid board-bill of the defunct.... Some of the towns in Connecticut have been victimized by

VENDERS OF TEA,

the article being put up in very handsome pound parcels, and in order that its quality might not be impaired, the purchaser was cautioned not to disturb it, but to keep it in the original package. About one fifth of the top of each package was tea, while the lower part was spent log-wood chips, hay, or whatever rubbish that came handy. We are at a loss to understand why people will purchase of peddlars; if staple articles are offered below the usual rates, there is very likely to be something wrong.

THE WYOMING LOTTERY

still sends out its circulars and schemes, in spite of the law prohibiting the use of the mails for such purposes. A correspondent in New Brunswick informs us that the circulars sent him are mailed from the New York P. O. The officials there have a sharp eye for such matters, and this evasion will not succeed long. The British provinces appear to be a favorite ground for these lottery chaps, and they offer most flattering inducements to persons to take agencies. Still the law begins to pinch, as we notice they caution their correspondents to remit money

only by express, to which we add another caution—don't remit it at all....There is no subject on which we have more frequent inquiry, or about which there are more complaints, than that of

TREE PEDDLERS AND NURSERY AGENTS,

nor is there any more difficult to treat. If we say that these men as a class are swindlers, and to be shunned, we do injustice to the few honest men engaged in the business. Some excellent concerns send out agents, who are properly authorized, and for whose acts their principals are responsible, but for every one of these there are in the field a dozen irresponsible chaps, who represent no one but themselves, who get orders and fill them with whatever rubbish they can buy cheapest. The only possible reason for buying of an agent at all, is a small saving in freight. If an agent takes orders from a dozen persons in a neighborhood, the whole lot of trees can be delivered in one parcel, and distributed to the individuals ordering them, at much less expense than the parcels could be sent separately. But the saving of a small sum is poor economy in the matter of trees, which, if not true to name, are worthless, and it is safest in all cases to deal directly with the nursery. If circumstances make it advisable to order of an agent, make sure that he is properly accredited. If an agent offers any unusual things, or novelties that no one else has, you may be sure that he is a fraud. Have nothing to do with "self-pruning grape vines," pears grafted upon the "French Willow," "tree strawberries," or any such impossible things. Especially be careful what agreements you sign.

MEDICAL MATTERS.

present but few novelties. It is amusing to see how the proprietors of quack medicines appeal to the love of the marvelous, and the stories of the origin and discovery of these various nostrums, if gathered in a volume, would make a series second only to the Arabian Nights in absurdity and impossibility. The majority owe their origin to the Indians. It seems to be a popular notion that the savages, the most degraded and ignorant of all things human, possess wonderful skill in treating disease, an impression that a slight acquaintance with Indian life would soon dispel. Yet more than half the quack medicines are accredited to them. Here in one Mrs. Leggett, who says: "I have gone from the Indian medicine man of the Nevada, to the very pink of science, (!), in order to inform and avail myself of all the information to be had on this subject, and must say that the Indian is far in advance, so far as relates to botanic medicine." Here is also "Doctor White," who "traveled through Europe and America, and the various inhabited islands in the different parts of the world, and among the Red Men of the forest," all to get his wonderful stuff. This White pamphlet is really a curiosity. The most horrible hotch of a wood engraving is given to illustrate "Dr. White and his wife together with their blooming, healthy, and interesting children." We are told on the next page that the Doctor is "an extremely rich man, with an income of about five-hundred-thousand dollars annually." We should think that so wealthy a man would, as a matter of family pride, put forth a better family portrait. It is not easy to see why one so rich, "and the owner of a number of fine elegant ships, which sail in different directions to every part of the world," should be offering premiums to those who get up agents for his stuff. We thought Mother Noble and Eddie Eastman were the sublimest efforts in literature of this class, but this Doct. White makes it necessary for these to look to their laurels....Look out for

HUMBUG COMMISSION DEALERS.

During the peach season there are always more or less rascals who pretend to be commission men, whose only store is a few square feet of side-walk. These bogus dealers do not confine themselves to peaches, but of late have tried to do a little in the dairy line. We have an eye on some chaps of this sort, but we are not quite sure enough to call names. Meanwhile let every one who has farm produce of any kind exercise caution as to the character of the dealer to whom he consigns it. The commission business, from its very nature, is a difficult one, and a dealer who is perfectly honest will, even in doing his best, often disappoint the consignor. Do not change your commission house for a slight cause; if the sales average well, stick to the same place. Glib-tongued, plausible chaps, are all over the country soliciting consignments. Make no promises, and do not send produce to any one, without first ascertaining something about him. It would be very unjust to say that those dealers who do not advertise in the *American Agriculturist* are unsafe, but it is very proper for us to assert that those who *do* advertise here are men of established reputation, to whom consignments may be made with confidence. Beware of the bogus chaps, who have no "local habitation," and no "name" but a bad one.

Meeting of the Swine Breeders' Convention.—At the adjournment of the meeting of the Swine Breeders' Convention, held at Indianapolis, it was left to the judgment of the chairman, Frank D. Curtis, Esq., of Charlton, Saratoga Co., N. Y., to choose the time when circumstances seemed to require a reassembling of the convention. We understand that a circular has been issued to the committee by the chairman, suggesting a meeting of the convention at Philadelphia during the Centennial Exhibition. If a sufficient number of members of the Association, or of persons interested in swine breeding, shall convey to the chairman a favorable view of his suggestion, the meeting will be called. It would certainly seem that there could be no better opportunity than this for a second convention. The first, held under many disadvantages, and having all the drawbacks of a new enterprise, has done a real service of immense value to all breeders of swine. It has reconciled conflicting, adverse, and lukewarm interests, it has given standards of excellence for the various breeds, which have been accepted without question by all parties; it has met in this critical age with no adverse criticism, and its usefulness has been universally acknowledged. It has brought a certain degree of order out of chaos, and one of its first fruits has been the reduction of the Berkshire breeding to the rule of an authentic record. If nothing more remained to be done, the convention would have had a good excuse for its organization; but its work is as yet only begun, instead of having been finished.

The "Campaigns" Political have not yet developed very actively. **Our** campaign starts to-day—against ignorance, poor crops, unskillful labor, etc. We ask our friends to help make it an "active" one, by calling the attention of their friends and neighbors to the offer on page 325. It will be seen that for **11** cents a month, (if subscriptions for 1877 is sent in this month,) or less than one-third of a cent a day, the *American Agriculturist*, with its many fine illustrations, its multitudes of hints and suggestions, etc., can be enjoyed from now to the end of 1877. Please let the non-readers understand this.

Horticulture at the Centennial.—Last month we gave some account of the contents of Horticultural Hall and its annexes. We had prepared a detailed description of the out-door exhibits for the present number, but our columns are so crowded, and we have already so much about the Exhibition that this is withheld for another month. It is desirable, however, to call the attention of those who visit the Exhibition to this out-door display, as it contains much that those interested in horticulture can not afford to overlook. There are about 40 acres devoted to out-door planting, and while a portion of it is done by the Bureau of Horticulture as a part of the decoration of the grounds, the greater part of the planting is made up by the contributions of exhibitors. These grounds, which presented a sorry aspect in the month of July, are now, in September, daily increasing in beauty. The sunken parterre, extending directly west from Horticultural Hall, probably furnishes the longest continuous example of ornamental planting in the country, and does much credit to Mr. C. H. Miller, Chief of the Bureau, especially when we consider the small number of well-marked plants that he had to work with, and the difficulty of procuring even these in sufficient numbers to work out his designs. Upon each side of this central parterre are the plots of exhibitors, some who have aimed at simply showing individual plants, while others have given excellent examples of ornamental bedding, in some cases using plants, which in the aggregate are worth hundreds if not thousands of dollars. Of course, there is some rubbish to be seen; it could not be well otherwise, where each has a plot to plant out as he pleases, but there are not enough of these indications of want of taste to mar the general effect. As in a brief note we can not enumerate the leading exhibitors, we refrain from mentioning any at present, but content ourselves by advising all lovers of rare and interesting plants to give the grounds on both sides of Horticultural Hall, as well as on both sides of the central parterre, a careful examination. In nearly all cases the exhibition is made instructive by means of careful labelling, and there are here brought together rare plants that at another time can only be seen by making long journeys from one nursery to another.

Uncle Sam as a Gardener.—In the grounds near the Government Building is a large plot, filled with exotic economical plants, some of which may ultimately be introduced in our southernmost States with profit, and is well worthy of examination. Another large plot is planted with the leading agricultural crops of the country, no doubt intended to give visitors from abroad a glimpse of our principal crops, from tobacco to Indian corn, at one view; here are to be seen Ramie, Jute, and several other southern products, not omitting cotton in full vigor, all of which will be novel and interesting to many visitors from the Northern States.

"All the Eggs in One Basket."—Mr. J. B. Olcott, the facile and often facetious agricultural editor of the "Hartford Courant," referring to the old adage, "Don't put your eggs all in one basket," says, why not? "If the eggs are good and the basket sound, the one a fitting receptacle of the other, and the owner sober and attentive to his business, why not jog along to market so in any civil community, as well as if the eggs and the efforts were scattered around in odd lots. ....Why not, where a man is fond of chickens, and has a good place to keep them, and is generally 'lucky' with fowls, go ahead and make a business of raising them and their eggs?"....Then referring to Mr. Stoddard's "EGG FARM," a work recently issued by Orange Judd Company, [see advertisement,] says: "....It is not offered as an exact pattern for everybody, or perhaps for anybody. It is meant to be suggestive—meant to cross-plow, fertilize, and seed the brain, as every good book is. It is sometimes more valuable to us in practice to see a thing so clearly set out in print that we decide not to do it, than if we accepted the plan, and proceeded to its execution. It is decision we readers need, and the material wherewith to make up our minds. Mr. Stoddard's Egg Farm will assist the poultry fanciers about that. Maybe we shall see therein that we have no natural capacity or culture for the business. That will be a heap of money saved. There is one thing you may be sure of: the work was contrived and written right here in our midst. There are no outlandish conceits in it to puzzle a Yankee, though some practical acquaintance with poultry may be needed to appreciate all the difficulties and necessities, for which Mr. Stoddard would provide."

The Farmer's Veterinary Adviser.—This is a very useful work by Professor James Law, V. S., of Cornell University. It treats of the diseases to which farm animals are subject, in a very plain, practical, and thorough manner. The author's methods of treatment are sufficiently simple and free from technicalities, that any owner of a sick animal can easily follow the directions given. For farmers and most veterinary surgeons in rural districts, this Adviser will be found useful and trustworthy. The work is published and sold by the author, Prof. James Law, Ithaca, N. Y. Price $3.00.

Tanning Leather.—"J. H.," Saluda, S. C. It would be impossible to give in the *American Agriculturist* sufficient directions for tanning and preparing leather to be of any practical use. A book, which is intended to be a standard American work on this subject, is now in course of publication. The author is the well-known tanner, Jackson S. Schultz, and the book is sold to subscribers only at $5 a copy.

The National Agricultural Congress will hold its Annual Meeting in the Judges' Pavilion, on the Centennial Grounds, at Philadelphia, Sept. 12 to 14. Addresses will be made by the President, W. C. Flagg, of Ill., Commissioner T. P. Janes, of Ga., Joseph Harris, of N. Y., and others.

Coal-Oil Barrels.—"D. M. W.," Blair Co., Pa. We doubt if there is any process, not too costly to be practical, by which you can clean oil barrels, without removing the head. It is said that they may be so prepared by a thorough burning out of the interior, that they may be used for cider, without injury to its taste or smell, but we have not had occasion to try it.

Ventilation of a Drain Well or Cesspool.—"J. E.," Germantown, Pa. To carry a tin pipe 3 inches in diameter from the well or cesspool into the kitchen chimney, as near the fire as possible, would be an effective manner of removing and gases that might be evolved from the drainage. To bring the gases into as close contact as possible with the hottest air of the chimney, would be to dissipate them most effectively.

Perpetual Motion.—"C. A. L.," Anamasa, Iowa. There is no premium offered for the discovery of perpetual motion by any government in the world, notwithstanding the very prevalent popular delusion that there is. The idea itself is a relic of the dark ages, in which the philosopher's stone, the elixir of life, the fountain of youth, and other impossible expectations were "for man's delusion given."

Thrashing Machines at the Centennial.—The result of the exhibition test of thrashing machines at Philadelphia was rather in favor of the tread-powers, as being the most economical both in power and time. Thus a one-horse tread-power thrashed 1,000 lbs. of grain in the straw in 34 minutes, with an elevation or incline of the tread of 15½ degrees. The yield was 319½ lbs. of grain, or 5⅓ bushels, equal to 9⅓ bushels per hour. Two-horse tread-machines thrashed the same

quantity in from 14½ to 19½ minutes. A 6-horse steam-thrasher took 14½ minutes to thrash 2,000 lbs. of grain in the straw, yielding 598 lbs. of grain, or nearly 10 bushels; equal to 40 bushels per hour. A 10-horse steamer thrashed 2,000 lbs. of grain in the straw in 13 minutes, and another occupied 15½ minutes, each yielding 10½ bushels of grain in the times mentioned. A one-horse tread-power is thus seen to be capable of doing the work of 9½ men with the flail, allowing 10 bushels of grain as one day's work for a man. The two-horse powers, on the average, exactly doubled this work. The 6 and 10-horse power steamers each did the work of 40 men. The deduction clearly is that where the harvest is a small one, a one or two-horse tread-power is the most economical machine; more especially, as the horses, if not at work on the machine, would be idle.

Basket Items continued on page 353.

How to Cure Fodder Corn.

BY L. D. SNOOK, YATES CO., N. Y.

Fodder corn is very difficult to cure in the field, so that it will not suffer damage when housed or stacked. The simplest method is to cut with a mowing machine, letting it remain spread upon the ground for two or three days, or longer. If the weather be cloudy, it is raked into windrows with the horse-rake, made into large bunches, and topped off with a bundle tied firmly near the buts, and adjusted over the top, as in figure 1.

Another plan is to cut by hand with a cradle, or with a self-raking reaper, in either case letting it lie at least half a day, and if the weather be dry, three or four days will be all the better, as much moisture will be evaporated; besides it can be then bound with stalks better than when not wilted. Should the cut stalks be from four to five feet in length, from eight to twelve bundles may be placed in a shock, and tied firmly at the top, as in figure 2. Should the stalks be but two to three feet in length, I stand about twenty-five bundles upright for a foundation, and upon this place a sufficient number more, to top the whole out nicely; then tie the tops

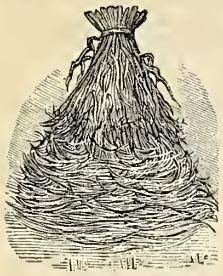


Fig. 1.—COCK.

Fig. 2.—SHOCK.

of the last tier, and the stack will stand a heavy rain, and present a neat appearance, as in figure 3. The stalks may be cured previous to binding, by the plan shown in figure 4. Two crotched sticks are driven in the ground, upon which is placed a rail or pole two or three feet from the ground, upon either side of which a row of unbound stalks

Fig. 3.—STACK OF LONG FODDER.

is placed in a slanting position, and fifteen inches in thickness; the ends should remain open for free circulation of the air. The thinner the course upon either side, the quicker the stalks will be ready to be bound and housed. Figure 5 illustrates a plan in which the stalks do not lie in contact with the

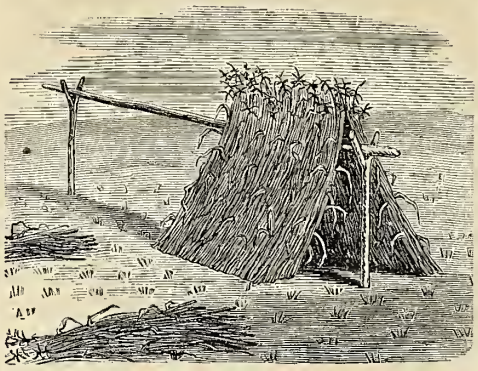


Fig. 4.—METHOD OF CURING FODDER.

ground. Rails or poles, six feet in length, are placed upon the ground ten feet apart; upon these are laid other poles or rails, upon which are piled two tiers of bundles from four to five feet in hight.

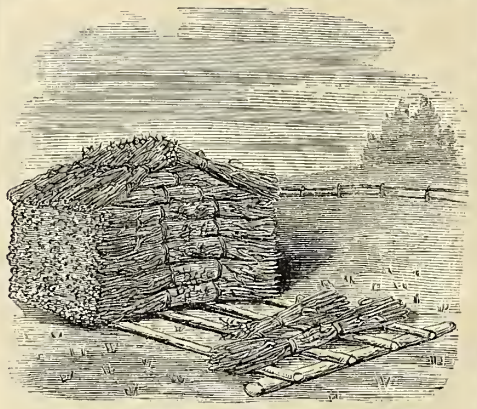


Fig. 5.—METHOD OF STACKING FODDER.

These are covered with rows of bundles placed in a slanting position upon the top. By this plan the buts are placed upon the outside; and should they be damp or green, an air space may be left between the tiers.

The Centennial Exposition—Go and See It, if Possible.

We visited the Exposition early in July for a week, to take a general survey, reserving a more careful, thorough examination of details until the cooler days of September and October. Having visited three "World's Fairs" abroad, two in London and one in Paris, we are able to speak somewhat comparatively. Referring to the largest of these, the Paris Exposition of 1867, we consider the Philadelphia Exhibition of greatly superior value for *our* people generally. The former greatly exceeded us in costly works of art—the accumulation of hundreds of years—but in the things that have to do with the everyday life and work of the American people, our exhibition is far ahead.——In Paris the whole exhibition was crowded into a limited area; in Philadelphia there is abundant room for showing up the multitudinous articles to the best advantage for study and investigation.——In Paris, the personal comfort of visitors was little cared for. To obtain a drink of water, a seat for resting, or a retiring room, one had to hunt for it, and pay for it. In Philadelphia, these personal conveniences, so important to one spending a weary day, or days, are provided quite abundantly and freely. The single admission fee pays for everything—except refreshments ordered, 10 cents for a ride up and down the elevator for those who do not choose to ascend the commodious stairs, and the 5 cents for 3½ miles ride all around the grounds on a steam railway.

It would be useless to undertake a detailed description of the Exhibition—several large volumes would be required for this. There is the *Main Building*, 1,880 feet long and 464 feet broad—a larger space than a **20** acre field, or 350 lots of 25 by 100 feet each—and all this space packed full of articles, few of which are not worth examining. An "Annex" of this building, covering 2 acres, is filled with carriages, etc.——Next in size is the *Machinery Hall*, 1,402 feet long and 360 feet wide—nearly **12** acres—mainly filled with useful machinery, of which a good deal is in active use.——The *Agricultural Building* is 826 feet long and 540 feet wide (over **10** acres), filled not merely with agricultural machinery and implements, but an infinite variety of productions of the soil in our own and other countries. And near this building are several other spacious structures for farm wagons, for orchard products, grains, honey, etc. ——The *Horticultural Hall*, 383 feet by 193 feet (nearly **2** acres), with 40 acres more, on which are growing almost every variety of ornamental plants to be found in all the horticultural establishments in our whole country, and many from abroad.——The *Art Gallery*, or Memorial Hall, 365 feet by 216 feet (nearly **2** acres), constructed of granite, iron, and glass, at a cost of $1,500,000, with a supplementary building still larger, and the whole filled with paintings, statuary, etc.——The Government Building covers nearly **2** acres, and to examine the contents of this alone would be worth a journey of a thousand miles and several days' time. —To go through the aisles and cross-walks of these seven buildings alone is a journey of some 25 miles! and every step of the way one sees on either hand some objects of interest.

But the above are only a part of what is to be seen. There are a hundred or so of other buildings, some of them large, which are worth a visit, such as the Dairy Building, Leather Building, Glass Works in operation, Women's Pavillion, Twenty or more State Buildings, all different, and each with peculiar attractions; and nearly as many more erected by foreign Governments. Some of these, as the Kansas and Colorado Building, the Japanese structure, etc., contain as much to interest one, as is usually found in a whole "State Fair." The buildings devoted to special objects, individual manufactures, etc., scattered here and there, over the **236** acres devoted to the Exhibition, are too numerous to be detailed here.—It is literally a "World's Fair," for almost every part of the whole world has sent here more or less of the products of its labor, of its mechanical skill, or of its soil. The like of this exhibition has never before been seen in our country, or its equal in any other, and we can not expect another during the present generation.

Every man, woman, and child of 12 years old and upward, who can possibly do so, should visit Philadelphia sometime during September or October, and spend a week or more—better two or three weeks, or more. We would say go, if but two days can be taken to simply walk through the principal portions, but a week will be found a very short time, even to the strong, vigorous man.

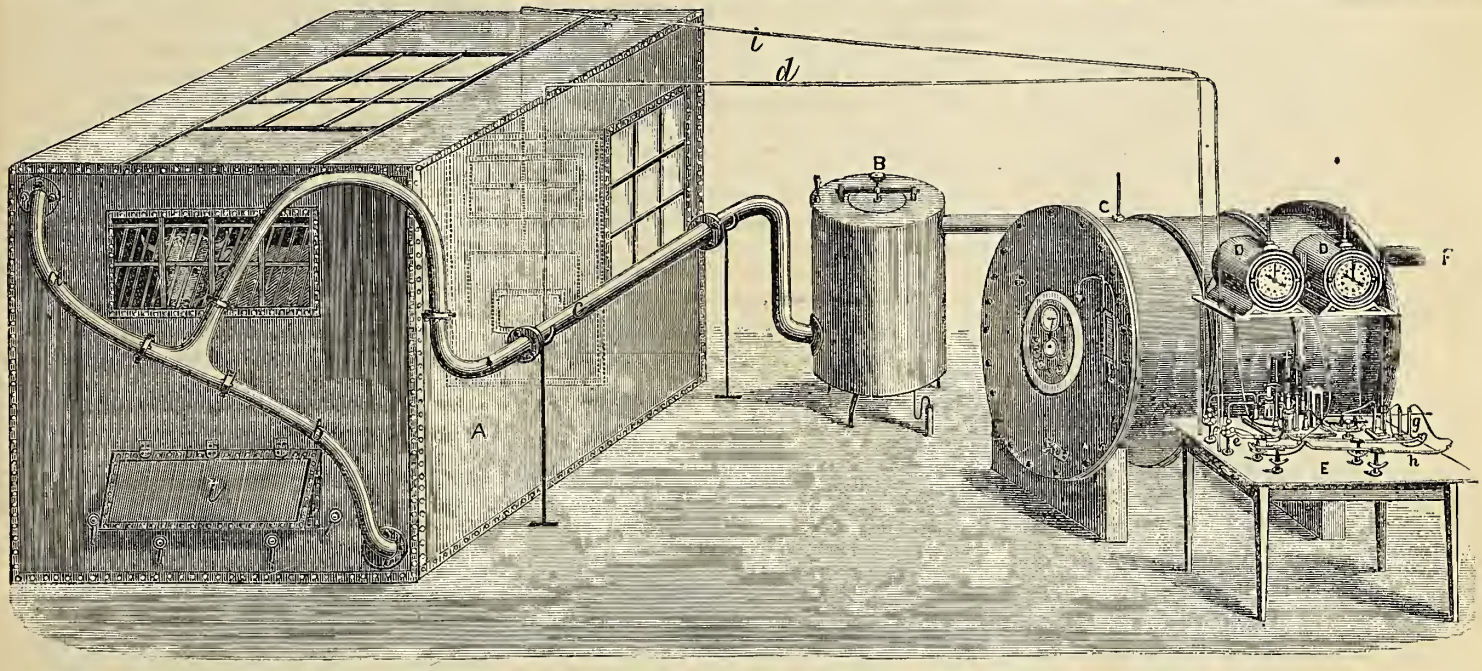
Who can go? Comparatively few will feel that they can afford the expense in these "hard times." Let us look at this question. If there were an enterprise promising a sure return of 20 per cent per annum, a great number of people would in some way manage to get together at least $100. We think the information gained, and the satisfaction continually derived from a visit to this exhibition, would be worth $20 a year for all the rest of one's life. The cost of a new dress, of a new carpet, of some intended improvement, any one of which can be delayed for a year, would pay the expense of a week's visit to Philadelphia of one or more persons, according to the distance.

What is the cost? First, the cost of traveling, which will depend entirely upon one's locality. Second, the cost while in Philadelphia. *a*, Fifty cts. for entrance; *b*, 25 to 75 cts. for a lunch on the grounds. A very good lunch can be obtained for 40 or 50 cts. at the "Café Leland," in the south middle of the Main Building, or at the German Restaurant, near Horticultural Hall, and at some other places. (Usually two persons can lunch on each "portion" served at the restaurants, which is quite a saving where there is a family together.) *c*. Rooms with bed are to be had in large numbers adjacent to the

exhibition main entrances for $1 a night—not very spacious rooms, or very luxurious beds, but those that will answer for a week or so. Add 60 cents to $1 for supper and breakfast, to be got at the hotels or restaurants without or within the grounds. There are numerous boarding houses in West Philadelphia, which take persons for $12 a week, or $2 a day, furnishing lodging, supper, and breakfast. Every train going into the city is traversed by agents, who furnish tickets for lodging, breakfast and supper, for $2.50 per day. One at all accustomed to travel, or make his way, can usually do quite as well to look out for himself after arrival. Those who wish to economize the most possible, can thus get along quite comfortably for $3 a day, including entrance fee. By careful economy in lunches, etc., many can reduce this amount 50 to 75 cents. One with a family of children can make the average somewhat less. We have allowed nothing for purchases, or other extras; almost every one will desire a few dollars for such purposes. We are only writing in the interest of our readers, desiring as many as possible of them to enjoy and profit by this opportunity, and we are trying to figure out how it can be done.—By the above it will be seen that one can go and spend 10 days at the exhibition for $30—perhaps $25—in addition to the excursion ticket to and from Philadelphia—less for less time, and more for more time there.

How to Examine the Exhibition.—Whether one goes to Philadelphia or not, it is well worth while to get a copy of the "Authorized Visitor's Guide." (Any book seller will supply it, or one will be mailed from the *American Agriculturist* office, post-paid, for 25 cents). Get this now and study it beforehand.—Arriving at the grounds we advise the following: Enter at the main (south) gate; turn to the right; pass leisurely down the center of the Main Building to its middle; ascend to the top by stairs, or better by the elevator (10c.), and with the map in the Guide before you, look down upon the whole grounds, and locate the leading buildings. Descend and continue on to the east end; cross over the avenue to the north and enter the open railway cars, and (fare 5c.) ride around the whole grounds, stopping off, on returning, in front of the "House of Public Comfort." Cross over to east end of Machinery Hall, and pass down through the whole length of this. Go up Fountain Avenue to the Government Building, and pass through the middle of this, east and west, and north and south. Leave the north-east end; cross over to the Women's Pavilion, and take a glance through it. Then cross over to your own State Building and rest. Next enter the cars and ride (5 cents) to the Brewer's Building. Pass through this and the Farm Wagon Building, into Agricultural Hall. Walk through to the south-east corner, and ride over the Elevated Railroad (3 cents) to Horticultural Hall; walk through it, ascend to the second story, and see the grounds around it on every side, especially at the west. Pass south to the "Annex" of the Art Building (102), and through this into and through the Main Art Building; then west to the Annex of the Main Building (106), and you are near the main entrance. If one merely walks leisurely along, without stopping to particularly examine any objects, this can all be done in two to five hours, and the visitor will have a general idea of *what* there is to be seen and *examined*. This round may be extended to a day or two even, if one is to spend 8 or 10 days or more, but we advise hastening on through this first general view, and not stop to see anything particularly. Each point will then retain its novelty until specially visited. Next to the buildings named, one will be interested in the Leather Building (7), the Glass Building (15), the Kansas Building (157), the Penn. Educational Building (122), and so on. There are few of the smaller structures, all over the grounds, that will not repay an examination.

Having taken the above general survey, one can divide the time at his command, so as to give most attention to those things that most interest him. Remember that sight-seeing is tiresome to body and mind, even for the strongest man. Therefore stop, sit down, and rest 5 to 10 minutes every half hour, or every hour certainly, whether you feel weary or not. You will thus see more in the course of the day. If one merely takes lodgings, he can get his meals, at least those after breakfast, inside the grounds, which are open from 7½ A. M. until dark.



RESPIRATION APPARATUS USED IN FEEDING EXPERIMENTS WITH OXEN AND SHEEP AT THE AGRICULTURAL EXPERIMENT STATION AT WEENDE IN GERMANY.

Science Applied to Farming.—XXI.

BY PROF. W. O. ATWATER.

Experiments in Cattle Feeding at the German Agricultural Experiment Stations.—The Respiration Apparatus.

Every thinking farmer in America feels the need of more definite knowledge of the effects of different kinds of fodder and ways of feeding upon his stock. It is important to know what are the relative values of different foods, what ones are best for working or for fattening animals; what best fitted to produce milk for butter or for cheese, and so on, and in what proportion and amounts they should be used, so as to bring the best return with the least cost. These things can be learned only by feeding trials with different animals and kinds of food. The great trouble with our ordinary farm experiments is, that they are not made with sufficient accuracy and thoroughness to give definite and decisive results. The experiments in cattle feeding at the European Stations are carried out with an amount of patience and painstaking, with an outlay of money for apparatus and labor which, to those not versed in such matters, is quite astonishing. Connected with the Stations are barns, stables, and chemical laboratories, so that provision is made not only for keeping and feeding the animals, but for accurately measuring, weighing, and analyzing the food they consume, the dung and urine they excrete, and even the air they breathe. One great result of these experiments has been to show that economical feeding is not simply a matter of so much hay, roots, grain, or other foods, but depends rather upon the ingredients of which the foods are composed. To use foods economically, we must know what their ingredients are, and how they supply the wants of the animal's body. We can then decide what amounts and proportions of different foods we must use to supply the needed ingredients in the proper proportions and with the least waste.

What is done with the Food in the Body.

If we could watch the processes of nutrition and assimilation inside the body of the animal, if we could follow the course of the particles of gluten and starch as they are separated from the hay and grain in the stomach, taken into the circulation, and finally stored away as flesh or fat, or made over into the casein and butter of the milk, or consumed in respiration, the solution of these questions would be easy. But this cannot be done, and we must employ an indirect method of experiment. The method which the patient and skillful German experimenters have devised for learning how the animal disposes of the food in its body, consists, practically, in determining all that goes into the animal's body and all that comes out of it. Then by applying known principles of chemistry and physiology, which we have not space here to explain, they infer how each ingredient of the food has been used in the body. The whole amount of the food is learned by accurate weighings and measurements, and its composition determined by chemical analysis. Thus we learn how much of albuminoids, carbohydrates, and fats, of water and mineral matters, the animal consumes. These undergo various transformations in the animal. The part which is not digested passes off in the solid form, as dung. The digested portion is used in the growth and in the continual rebuilding of the different parts of the body, as flesh, fat, bone and milk, and in respiration. When its work is done, the products of its transformation are given off, either in a liquid form in the urine, or in the form of gas or vapor in respiration through the skin, and, more especially,

the lungs. The final products of the use of the food in the body are, then, the excrement, the urine, and the expired gases and vapors. To gather all these and determine their amounts and composition, the Respiration Apparatus has been devised.

The Respiration Apparatus.

This consists essentially of a large chest or compartment with air-tight walls, in which is placed an animal, for instance an ox. The interior is furnished with arrangements for supplying food and water and collecting the excrement and urine. By appropriate machinery a current of fresh air is introduced through openings provided for the purpose, and after it has supplied the wants of the animal for respiration, is drawn out, bringing with it the gaseous products of respiration, into a gasometer, where it is measured. It is then analyzed, and a comparison of its composition with that before it had passed through the apparatus, shows what material has been added to it by the respiration of the animal.

In the engraving, which shows the Apparatus at the Station at Weende, in Germany, *A* is the compartment in which the animal under experiment is kept. This is made of sheet-iron, and is some 9½ feet long, 7¾ feet wide, and 7¾ feet high, and so arranged that an ox may be kept inside for a period of several weeks very comfortably, as is indicated by the expression of the animal which the artist has put in to make the picture a bit more real. In the front end below the window is a lid, *l*, through which food and water are supplied, in a box fitted for the purpose. In the rear is a door, shown by dotted lines, through which the animal is admitted, and an attendant can enter if necessary. Inside are arrangements for collecting the dung and urine. The joints and closings are made tight, so that no air can enter except through apertures provided for the purpose in the rear end. A draft of fresh air is drawn in here, passes through the compartment and out at the front end through the pipes *a* and *b*, which unite in one single pipe, *c*. The air passes by this through the cylinder *B*, into the large gas-meter *C*, where it is measured and proceeds thence by the pipe *F* to a large air pump, not shown in the picture, by which suction is produced, and a constant current maintained. By appropriate machinery the working of the air pump, and consequently the current of air through the compartment, is regulated. The amount is shown by the gas-meter. The cylinder, *B*, contains porous stone saturated with water, by which the air is moistened to prevent its carrying away the water in the meter *C*.

How the Experiments are Conducted.

Now, as is well known, animals in breathing inhale the air with its oxygen. This latter unites with the carbon and hydrogen of the food, or of the materials formed from the food in the body, and produce carbonic acid, a compound of carbon and oxygen, and water, which consists of hydrogen and oxygen. In fact a combustion takes place in the body just as truly as in a stove, the products of the combustion being the same in both cases. The air contains a very little carbonic acid and water before the animal breathes it, and still more, of course, afterwards. If then we analyze it before and after it passes through the compartment, we can readily tell how much of carbonic acid and water it has gained; that is, how much has come from the animal. Connected with the apparatus are two long small tubes, *d*, *i*; *i* starting near the apertures in the rear of the compartment, while *d* opens from the large pipe *c*. On the table *E*, in front of the large gas-meter, are two small air pumps, *e*, *e*. Connected with these on one side are the long tubes *d* and *i*, and on the other, the two small gas-meters, *D*, *D*. While the large pump is working and drawing the air through the large pipe *c*, the small ones draw a part of it through *d* and *i* and the small meters, *D*, *D*. On the route it passes through the apparatus on the table *E*, which determines the amounts of carbonic acid and water that it contains. By comparing the composition of the air from *d*, which has been breathed by the animal, with that from *i*, which has not been breathed, we can readily learn how much more carbonic acid and water there is in one than in the other. Comparing the amount thus analyzed with the whole as measured by the large gas-meter, it is easy to calculate how much carbonic acid and water the animal has exhaled. In conducting the experiments, the ox is put in the compartment, the closings made tight, and the air-pumps set to work. At proper times food and drink are introduced by the box at the lid *l*, and after the animal has consumed what it will, the rest is removed. The excrements, solid and liquid, are collected by very ingenious arrangements, it being only occasionally necessary for an attendant to enter to insure the neat accomplishment of this purpose. The weighing and analyses of the food and of the products of its use require, of course, a great deal of time and trouble and expense. Indeed a single experiment often requires the labor and attention of several men day and night for a number of weeks or months. Several years after the Apparatus at Weende had been set in operation, one of the chemists remarked to the writer, who was visiting there, that they had barely learned how to manage the apparatus, the animals, and the food, and were just ready to commence a series of researches which gave promise of definite results.

The first successful Respiration Apparatus was that devised by Pettenkofer, in Munich. It is smaller than the one at Weende, which was copied from it some twelve years or more ago. A third was added in 1870 to the equipment of the Station at Halle, and a fourth was put in operation some three years or so since at Leipsic.

Wesleyan University, Middletown, Conn.

Bee Notes for September.

BY L. C. ROOT, MOHAWK, N. Y.

The labor necessary during this month depends much upon the locality, and the autumn yield of honey. In most sections this is the proper time to prepare bees for winter. One of the most important things to be remembered by the inexperienced is, to avoid inducing bees to rob. In all operations avoid exposing honey, and see that the hives are properly closed, and entrances partially contracted. If forage is very scarce, the bees will improve every opportunity to rob. Under such circumstances it will be best to operate morning and evening, when few, if any, bees are flying. At such times smoke must be used more freely for subduing the bees.

Each hive should be weighed, and if movable combs are used, combs from the heavier swarms should be exchanged with the lighter ones. If after this any hives are found to be too light, the bees should be fed. They should have at least 25 pounds of stores when put into winter quarters. If, as is usually the case with most bee-keepers, partly filled boxes are taken from the hive, as the season draws to a close, the capping of such combs as are partially sealed may be broken, and the boxes put upon the hives when feeding is needed. The bees will remove the honey to the body of the hive, when the boxes containing these dry combs may be packed away for another season's use.

Care should be taken to keep all upward ventilation in hives closed. All holes in the top of the box hives should be well closed, and when mats or quilts are used at the top of movable-comb hives, they should be kept snugly in place. This will tend to keep the hive warm, and help to continue breeding, which is especially desirable at this season.

I consider this and the previous month the very best for introducing young queens, from the fact that when introduced, the stock will rear a much larger quantity of brood than they would have done had the old queen remained. This is especially the case with swarms that are devoted to the production of box-honey. Swarms upon which the extractor is used are usually in much better shape than others for winter, from the fact that each operation induces breeding, thus bringing a large supply of young bees late in the season.

Correction.—In Notes for August, p. 289, in 26th line from the bottom, the word "glass" should read "loss.'

The Department of Agriculture—Centennially.

The Government wisely and liberally provided for an Exhibition by each of the different Departments, and one of the most interesting features of the great Exhibition is the Government Building. Here one can get in a short time a better idea of the work of the various Departments than he could by passing weeks at the seat of government. Here, under one immense roof, the War and Naval, the Postal and Treasury Departments, show their materials and their workings; the Signal Service and the Patent Office make displays of great interest. Here is also the Smithsonian, which is a ward of the government, and last, but by no means least, is the Department of Agriculture, the show of which is exceedingly attractive, and creditable to its subordinates. The horticultural division makes a fine display: the museum is represented by numerous and excellent models of fruits, while birds, quadrupeds and insects that are of agricultural interest are displayed. The statistical division presents a world of information by means of large and ingenious maps. The chemist makes an attractive exhibition, and the botanist has a collection which shows the wood, leaves, and flowers, of every tree in our broad territory—a collection that must have demanded an immense amount of pains-taking labor. The exhibition of the Department of Agriculture is highly creditable to every one concerned in preparing it, and an honor to the country. We have more than once said that there was excellent working material in the Department, and that it only needed a head, in order to be of use to the farmers of the country. It seems that Congress entertained some such idea, for in making the appropriation for this exhibition, it placed its disbursement, not in the hands of the head of the Department, but in that of his subordinates, a rather unusual proceeding, but in this case the result appears to have warranted it, as it shows that in this extraordinary duty of making an exhibition, the Department can get along without any other than a nominal head, just as it does in its every day workings. The Monthly Report of the Department of Agriculture for May and June, may be regarded as a Centennial number, as it gives a very full account of the exhibition made at the Centennial by the heads of the various divisions of the Department. Though the Commissioner was ignored in the law directing the exhibition to be made, he is not by any means to be kept in the back-ground, but he comes out strong in this Centennial number in an article entitled: "Cross-breeding of Grain," which we are told is "By the Commissioner"; this was hardly necessary, as we know of no one else in the Department, or out of it, who could have written the article. We do not like to use slang, but extraordinary occasions demand unusual words, and we have no hesitation in saying that this article is a "stunner"—we were about to say a "sockdologer," but not being quite sure as to the full force and meaning of that word, we refrain. We read: "the farmer is especially called upon to bestow industrious thought as well as laborious labor upon the work which he is daily called upon to perform."—We now know what ails the farmer, it isn't too much middleman, or too little Granger, but it is this "laborious labor." Then we are told that "the earth itself is a set of mouths and lungs, which feed upon the natural elements of the air, and imbibe its moisture and light and heat."—It seems rather hard on old Mother Earth to be told she is all mouths and lungs, like some Congressmen—and she "imbibes" too.—Well, it must be so, for we have seen the same statement by the same authority on a former occasion. The article goes on in much this style for over a page. What it is about we are not at all sure, but the final sentence is as follows: "The leaf or flower which protrudes from the glume of wheat is neither an anther, a pistil, nor a stamen, and neither emits nor receives the fertilizing pollen."—Oh Mr. Commissioner how could you stop there?—you tell us what that thing-a-my isn't and what it does'nt, but why not tell what it is and does? Jack Bunshy never gave "an opinion as is an opinion" that equalled that. The absurdity of this sentence may not be so striking to the unbotanical reader, but it would be just as sensible were one to say "The cellar-door or gridiron which protrudes from the chimney of a house is not a boot-jack, a coffee-mill, nor an andiron, and neither mends the cellar stairs nor puts the baby to sleep." One has just as much meaning as the other. We can not boast much of our progress, when at the end of a century, the man chosen to

represent our agriculture publishes to the world such incoherent rubbish as this article. We do not so much care what people abroad will think of us, but we do care what American farmers will think when they read such a production from one who is their official chief. We have received inquiries from California, Ohio, New England, and elsewhere, asking what it all means.—We do not know.

Ogden Farm Papers.—No. 79.

BY GEORGE E. WARING, JR.

Since writing the last number of these papers, I have passed the whole of a long day, on which there were very few visitors, in going carefully over the display in *Agricultural Hall* at the Centennial. This examination leads me to modify in a slight degree my previous opinion. The impression one gets during the examination of only two or three hours, is what I represented, because this length of time is sure to be mainly monopolized by a few of the more striking features. But on further study it became evident that it is by no means just to say that there is anything like "A good exhibit of the agriculture of almost the whole world." If we take out the barrels, bottles, cans, and boxes, which are filled with whisky, rum, gin, tobacco, cigars, starch, tomatoes, etc., we rob most of the foreign exhibits of their crowning glory, and sadly take away from the brilliancy of the display that even our own country has been able to offer. This is not the place in which to print objections to the products of the still, the wine press, or of the tobacco field, but to see at least one-fourth of this fine building filled with a dazzling display of cooperage, glass-blowing, and label printing, is simply absurd. All this part of the show is beneath contempt, and, as an exhibition, has nothing whatever to do with agriculture—the tobacco exhibit is not quite so subject to this criticism. A pyramid of barrels, said to contain whisky, highly varnished, with gilded hoops and ornamental brands, give one a far less adequate idea of the products of the industry of Canada, than would a simple, printed statistical table, showing the amount of whisky that she produces as compared with other countries. All this sort of thing is a fraud. It pretends to be an exhibition of materials—it is in reality only an exhibition of packages, and packages are not worth sending to a world's fair. Several foreign countries have sent instructive and representative exhibits. Those of Brazil and Liberia are conspicuously so, but with a few notable exceptions of this class, there is more of interest in the Exhibition of Oregon, or Iowa, or Massachusetts, or indeed in Landreth's exhibition of grains alone, than in the whole of those of the great foreign countries. If one is seeking the *beauty* of a display of soil products, no more beautiful example can be found than in the collection of pine cones from California—a collection that surely should find its place in some Eastern museum.

Tucked away in one corner of the building, not open to any one of the main aisles, is one of the most valuable exhibits of the whole show—to one who seeks knowledge for its own sake. It is hardly likely that the silk industry will be widely extended in this country, and it does not seem probable that we shall ever grow tea here, but in the Japanese corner of Agricultural Hall, there is, among other things of subordinate interest, an illustrated description of the tea and silk industries, which is worthy of all admiration. Many of the utensils are shown in their full size, and perfectly arranged for working, and every step of the processes, of the growing and curing of the leaves, of the raising of silk worms, and of the care and supply of the mulberry leaves, is shown by a series of little paintings, accompanied with a plainly written and carefully arranged description of each item of the work. An examination of this display will not be, even from a practical point of view, a waste of time, for it will teach the important lesson that in agriculture, as in everything else, a minute and careful attention to details, makes the sum of a great success. There is one little hint contained here, which may be applicable for some of our uses. It is an arrangement for storing a three or four days' supply of mulberry leaves in such a way as to keep them fresh. It was new to me, but may be common to all silk growers. The leaves are spread in very shallow wicker-work trays, so lightly as to produce no pressure, and these trays are placed one on top of the other in a tight box which has no bottom, and which stands on the ground in a place where it is protected from sun and wind. The coolness and moisture of the earth serves to maintain a fresh condition of the contents.

In the Norway section there is a plow with which I was very much struck. The plow proper consists only of a point and a mold board. Directly behind the point there stands a broad wheel or roller, which takes the place of the sole, and relieves almost the whole friction of the downward pressure of the plow. Behind this, set at an angle so that the necessary size can be given it without coming in the way of the turned furrow, is another beveled wheel, which acts as the landside, and carries the side-thrust. I did not see this plow at work, and could only judge of it on general principles, but it is impossible that it should not, if properly constructed, relieve this severest of our horse-labor of a very large percentage of its severity.

Mr. John Coleman, who was selected by the Royal Agricultural Society of England, as the English member of the Agricultural Group of the Judges of Awards, and whose intelligence, thoroughness, clear-headedness, and great fairness, won for him the high regard of all with whom he was thrown in contact, said of the double furrow plow now much used in England, that after all, its great advantage over others, is due to the beveled wheel which takes the thrust against the land, and so relieves the plow of its greatest friction, (another arrangement of rollers carries the weight and relieves the friction on the sole). This is precisely what the Norwegian revolving land side does, and as this and the sole roller are both adjustable, and have good arrangements for being kept clean, I am convinced that they cover a principle which might be widely and successfully adopted. Quite near to this plow stands a capital full-sized model of the Norwegian sledge, with its fur clad driver, and simply harnessed stuffed reindeer, which must be the delight of all who remember their school book pictures of the reindeer and sledge under the black northern sky, and within a halo of aurora borealis. The Norway harrow, with revolving tines, so often pictured in agricultural papers, is here seen, I believe, for the first time in America.

Beyond a capital self-opening gate from Canada, the above are about all that impressed me in the foreign exhibits—though, of course, farther investigation must have developed more. I found my time again chiefly monopolized by the excellence of the American implements and machinery department, where amid so much that is worthy of notice, it must seem invidious to call attention to particular objects. However, there are a few things sufficiently out of the ordinary run to merit special notice. Among mowing machines and harvesters the improvements are mainly in a class with which visitors to county and state fairs are tolerably familiar, or are at least steps in advance in a familiar direction. Here there appears an entirely new departure in the direction of vibrating movements—as for the knives of mowing machines. The mowing machine called the "Haymaker," may not be, and probably is not the best, for the reason that it has not had the years of skillful improvement to which these implements generally have been subjected, but if I know anything of mechanics, its curious gimbal joint "wobbling" movement, is a new departure in agricultural mechanics which will in time carry it to the very head of the list—I gathered also that this was Mr. Coleman's opinion. The movement is doubtless applicable to all agricultural implements where a vibrating movement is needed. The fence making machinery, for the boring of holes in posts, and the turning of round tenons to fit them—so arranged that the panels may be set at any angle, (if a snake fence without post holes is desired), must be of great value. I asked Mr. Coleman what he considered the most important improvement in the whole implement department, and he at once and decidedly gave that honor to Stratton's apparatus for loading hay on to wagons. He subjected this apparatus to the severest tests at the trial of harvest implements at Schenck's Station, and said that its action was simply perfect, the whole work being done perfectly and completely by the forward movement of the wagon as it passes along the windrows—without other manual assistance than that of the man who stows away the load.

One can never close any description of any part of the International Exhibition at Philadelphia, without the saving clause that all his efforts have been entirely inadequate, and that no description can give a fair idea of what is to be seen in any department. The immensity and variety of the whole are simply beyond the power of words to convey, and my own impressions concerning it all, were most tersely expressed by Mr. Judd, whom I met in the Government Building, and who said "I shall tell all our readers that they must come, even if they have to sell an acre of land."

Mr. Coleman and I got away from our duties as Judges, to devote a day to visiting the farm of Mr. James Young, at Middletown, on the Susquehanna, below Harrisburg. Mr. Young is a shrewd, thorough going Pennsylvania Yankee, who has accumulated a large fortune in business, and who realized fifteen years ago the necessity for anchoring a part of his investments in our fundamental industry. He has bought in the immediate vicinity of his town eight or ten farms, aggregating 1,200 acres, and has applied himself zealously—spending money without stint—to bringing them to the highest state of cultivation. So far as I know this is the best and the best managed farm east of the Alleghanies. If we except his large herd of Jersey cattle, there is not a single element of "fancy farming" about the whole establishment. Everything is plain, solid, substantial, and good. Much of the land was subject to injury from the accumulation of surface water, and much of it was rendered nearly valueless by underground springs. These have all been thoroughly drained by the opening of ditches; by the alteration of the surface conformation, so the surface water should flow off; and by the making of underdrains wherever the ground showed a springy condition. Small fields have been thrown together until the average size is from 40 to 60 acres. Lands worn out by a long course of skinning, have been improved by thorough cultivation, by the abundant use of manure, and by deep plowing, until they have been brought to a very high average of fertility. Every year, from 250 to 300 acres of corn are grown, (averaging from 60 to 70 bushels per acre), and the whole crop is fed on the place—the corn-fodder being cut and steamed with meal and bran. About the same area of wheat is grown, together with a wide stretch of rye and oats. Hay is largely sold, but, by the use of the steamer, the straw and corn-fodder are made available for feeding, and the enormous manure heaps, which at the time of our visit were being hauled out to manure the wheat fields, attested the extent to which the produce of the farm is consumed at home. We bantered Mr. Young a little as to the amount of money he must have expended in bringing his large farm to this condition, but were silenced by his reference to the "ducks and drakes" that had been made of his other investments in coal, iron, and lumber industries, from which the bottom had entirely dropped out. Let it not be supposed that Mr. Young's agricultural success has been bought with money alone, or that it maintains itself as an investment in government securities would do. Every step of its progress has called for the most persistent and unremitting labor and attention, and there is no prospect that these can ever be relaxed. Industry and close attention have shown here as well as elsewhere to be the leading elements of success in farming. Mr. Young's Jersey herd illustrates very fully all that I have said on the subject of breeding for fancy colors. Conceiving the idea that fashion and high prices were tending in the direction of "solid color and black points," Mr. Young has made these his leading aim, and has certainly succeeded in get-

ting together the most striking uniformity in these respects that I ever have seen; but, as is almost universally the case, his eye has wandered, in seeking these points, away from the true purpose of Jersey breeding, which should be to increase the amount of udder products. Among the large stable full of solid-colored animals, there are two or three of striking excellence, but the majority were well down toward mediocrity as milkers, while in an adjoining stable—to which he had banished the animals showing white marks—there were several of excellent quality, and one, which to my mind, was in beauty and in quality very far ahead of all the rest of the herd.

A "Half Stone" House for $3,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan is designed for a substantial, convenient, and inexpensive country house. It has two full finished stories with well lighted apartments of good size, and a large cellar and attic. It has also the merit of architectural beauty, well adapted

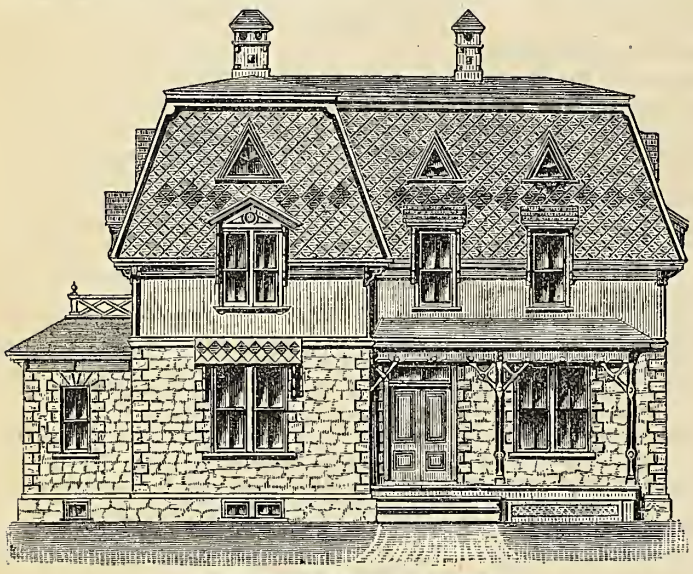


Fig. 1.—FRONT VIEW OF HOUSE.

to a commanding location....**Exterior** (fig. 1).—The "half-stone" composition of the side walls, and the strong outlines and slating of the main roof give to this structure a rustic, yet substantial appearance, affording both diversity and picturesqueness, as shown in the variety of the openings, and irregularity of the several parts. The front and rear elevations are similar; by changing the entrance doors and stairs, either side may front the road. The details of exterior finish are so simple, and easy of execution, that any "modification for the rear" is undesirable. Inharmonious and unsightly curtailments in the rear finish have a depressing influence on those obliged to face them daily, which can never be overcome by knowing there is a good front....**Cellar** (fig. 2).—Hight, 6½ feet, of which 4½ feet is below the ground surface, and therefore (with its thick walls), frost proof. It is always important to provide for carrying off the poisonous vapors always generated in damp cellars. For this purpose side openings are made near the ceiling into one of the flues of each chimney. These flues extending to the top and warmed by contact with the fires of the upper stories, have sufficient draft to constantly change the cellar air and prevent its ascent through the living rooms....**First Story** (fig. 3).—Hight of ceilings, 10 feet. Here are conveniently placed: three large rooms, a hall, china closet, and large pantry. Each large room has commodious windows with views in two directions. The Pleasant Piazzas at both the front and rear of the Parlor, extend over and protect the entrance doors....**Second Story** (fig. 4).—Hight of ceilings, 8 feet. The divisions are very simple, a hall, four chambers, four closets, and a bathroom. Light railings may be put on the roofs of the Wings and Piazzas to form pleasant Balconies to the windows of this story. One such balcony is shown over the wing roof (fig.1); the others may be similar. The small cost of these devices is fully repaid in their usefulness for airing purposes, besides imparting a cheerful appearance....**Garret or Attic.**—This story is thoroughly floored, but otherwise unfinished. Should additional chambers be required, partitions may be set over those of the second story, duplicating that plan, with rooms having the same hight of ceilings. The Stairs are placed immediately above those of the lower stories, are ceiled in, and have a door at the foot....**Construction.**—The durability, general abundance, and substantial appearance of stone, make it the most desirable and appropriate material known for the exterior walls of any building. The cost of cutting and dressing such material ready for use is the principle barrier to its general adoption. By using bricks for corners and for the finish around the openings, the most expensive item of stonework is saved. They need only to be "random dressed" and laid nearly in the shape in which they are quarried, as more particularly described in the July *American Agriculturist*, 1876. When such walls are carried beyond the hight that is convenient for the handling of the materials, the expense of their construction is largely increased. It is for this reason that the "half-stone" method is particularly valuable. In this plan the stone-work extends only to the hight of the ceiling of the first story; to this hight the materials may be readily wheeled on trestled scaffolding, while to double this hight would require the use of the tedious derrick, and additional help. The upper stories are framed of the usual sized timber, and raised on the stone walls, which in this case become their foundation. The main roof is constructed as shown in the *American Agriculturist* for June, 1876. The hight requiring siding is 4½ feet, or including water table and cornice, 6½ feet from the stone-work of the first story to the slating of the roof. The main roof covering is of dark slate laid on tarred felt. At or near the floor line dividing the upper stories, it is appropriate to indicate the division by the use of tinted slate, which may be laid in close courses or in simple figures as shown on the elevation. The roofs of the Hooded and Dormer Windows are also slated. The deck of the main roof, and the roofs of the piazzas, are covered with I. C. charcoal tin. The wood finish is made of simple design, devoid of all efforts at pretentious display, each part being chosen with especial regard for its utility and appropriateness. The Trusses, Piazza Columns, and Soffits are worked of timber neatly stopchampered, imparting a rustic appearance to them, in keeping with the stone work. The Water Tank is placed in the attic, directly above and in line with the Bath-tub and Kitchen-range, favoring the most practical plumbing. The Soil-pipe leading from the Bath-room floor passes down through the closet adjoining the kitchen chimney, to the Sewer-pipe, which is laid below the cellar bottom. The bad smells and gases arising from confined sewage may be easily disposed of by the insertion of a

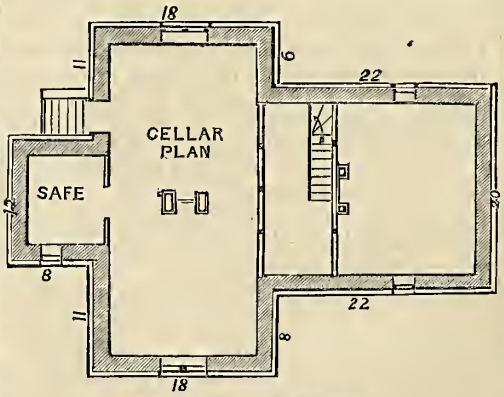


Fig. 2.—PLAN OF CELLAR.

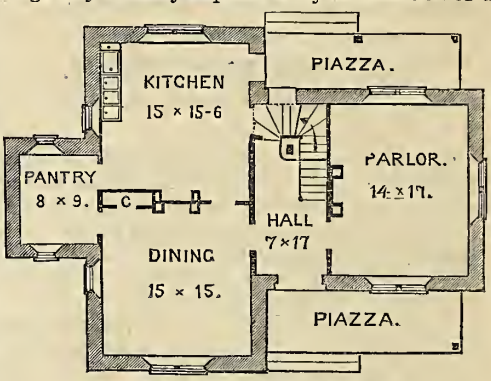


Fig. 3.—PLAN OF FIRST FLOOR.

2-inch pipe into the closet trap (at its highest point), and connecting it with a flue of the adjoining chimney. All inside plastering is of three-coat work. The casing of the bath-room and around all plumbing is in hard wood; all other trimming of clear pine. The Newel Rail and Baluster on the first story flight of stairs are of black walnut. All work usually painted has two coats of best lead and linseed-oil, with stainers to give the body (outside), a light gray, and trimmings in imitation of "Nova Scotia stone." Inside, Parlor and Hall, in grays; Dining-room in grays and drabs; Kitchen in drabs; Chambers, white....**Cost.**—Prices of building materials are nearly as low as they were before the war; many kinds are really selling for the cost of their production or manufacture. Labor is also very cheap, nearly at old figures. Those contemplating building, and having the means at hand to

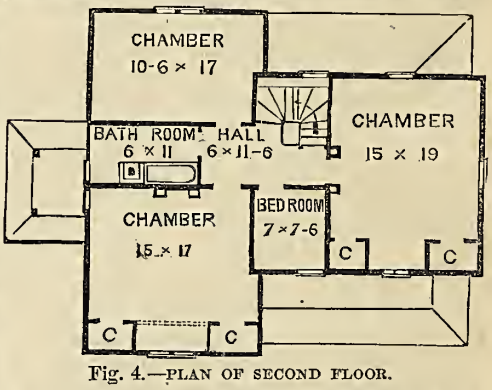


Fig. 4.—PLAN OF SECOND FLOOR.

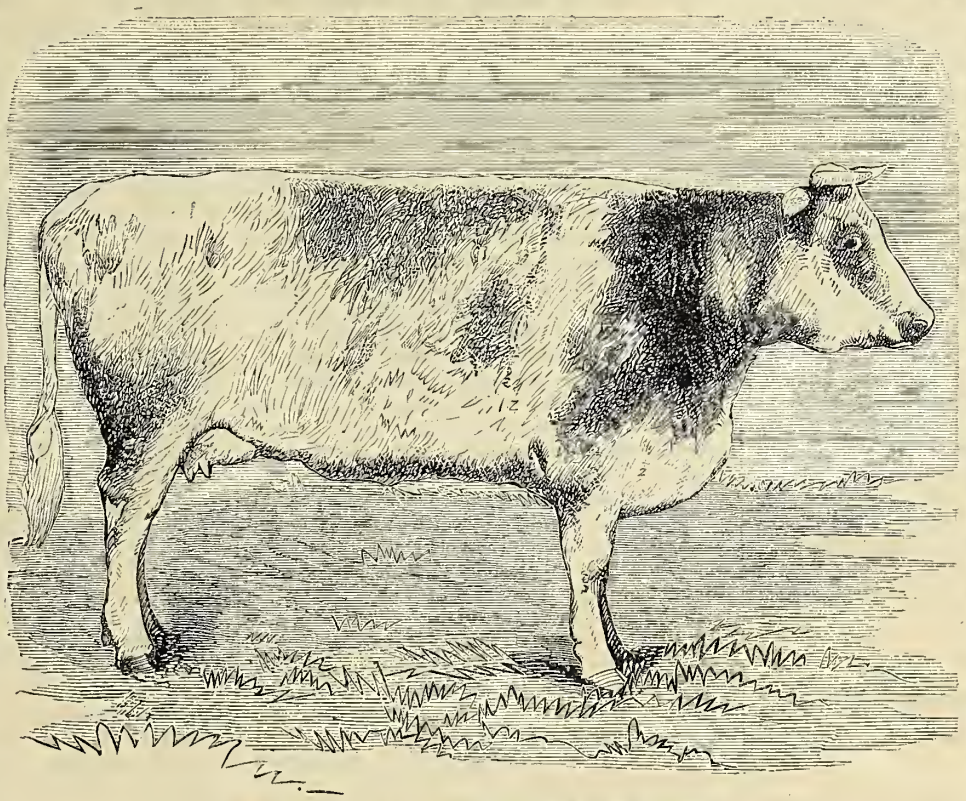
do so, need not wait for a more favorable time. As soon as general business improves, there must be a "rise" in materials, especially such as requires to be manufactured. The estimate appended includes the cost of all materials and labor for good work at the prices now ruling near New York city.

Estimate of the Cost:

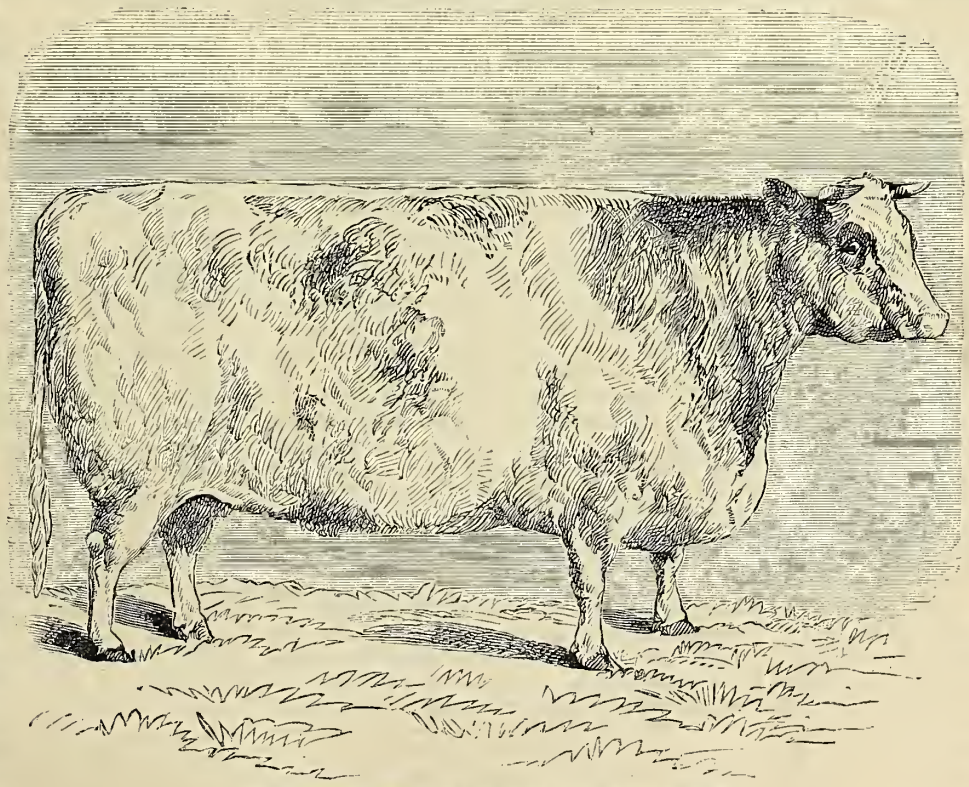
126 yards Excavation, @ 20c. per yard	$ 25.20
158 perches Stone Work, @ $2.75 ℔ perch	434.50
91 feet Stone Sills and Steps, @ 30. per foot	27.30
7,000 Bricks in angles, and chimneys, @ $12 ℔ 1,000, laid	84.00
750 yards Plastering, @ 35c. per yard	262.50
4,262 feet Timber, @ 2c. per ft.	85.24
viz. 2 Girders, 4x8 in. x 18 ft. long. 1 Sill, 3x8 in. x 175 ft. long.	
3 Girders, 4x8 in. x 10 ft. long. 1 Plate, 4x6in. x 175 ft. l'g	
16 Beams, 3x8 in. x 16ft. long. 1 Deck, 3x7 in. x 150 ft. l'g	
32 Beams, 3x8 in. x 18 ft. long. 5 Beams, 3x8in. x 9 ft. l'g.	
12 Beams, 3x8 in. x 22 ft. long. 4 Beams, 3x5 in. 20 ft. l'g.	
16 Beams, 3x8 in. x 24 ft. long.	
340 Wall Strips, @ 13c. each	44.20
100 Furring Strips, @ 6c. each	6.00
Cornice materials	50.00
75 Siding Boards @ 26c. each	19.50
357 Hemlock Boards, @ 16c. each	57.12
18 squares of Slate, complete, @ $9 ℔ square	162.00
14½ squares of Tin, complete, @ $8 ℔ square	116.00
350 Flooring Plank, 8 inch, @ 25c. each	87.50
2 Piazzas, complete, @ $80 each	160.00
7 Cellar Windows, complete, @ $5 each	35.00
14 plain Windows, complete, @ $8 each	112.00
11 Hooded Windows, complete, @ $15 each	165.00
8 Dormer Windows, complete, @ $8 each	64.00
Stairs, complete	90.00
23 Doors, complete, @ $9 each	207.00
3 Mantels, complete, @ $25 each	75.00
Closet finish, complete	20.00
Range and Plumbing	175.00
Nails, $25; Painting, $80; Cartage, $30	135.00
Carpenter's labor not included above	150.00
Incidentals, Attic and elsewhere	150.24
Total Cost, complete	$3,000.00

The Short-horn Speculation.

The business of breeding fancy Short-horns has diverged widely, and continues to still more widely diverge, from a legitimate pursuit. We use this word legitimate in its widest sense, for although a man may honestly breed, buy, sell, trade, exchange, and speculate in Short-horns, yet when he does either of these for any other ultimate purpose than seeking to supply the natural demand by farmers for the means of improving or increasing their stock, he is not putting his stock to its proper use. To use the arts of the speculator in stocks or grain, to make fictitious, or as the stock brokers call them, "wash" sales; to misrepresent their stock by widely publishing false and imaginary pictures of them, to procure extravagant prices by a system of bidding against bona-fide purchasers, and buying from one another; to create a spurious interest in certain classes of stock by thus bidding them up or buying them at unheard of prices, and immediately putting them upon the market again, so that they may go from one breeder's yards to another's with great *eclat* and much notoriety—all this is illegitimate and hurtful to the public interest. In so far as a bull or a cow may directly or indirectly serve to increase the production of milk, butter, or beef, or improve the quality of these products, it serves its proper purpose, but in so far as an animal is made simply a medium for the transfer of fabulous sums of money from one pocket to another, and an index of the money value of every other animal related to it by blood or pedigree, irrespective of actual intrinsic value, it is a fraud and a deceit. There has been much of this fraud and deception practiced of late in this so-called fancy stock business, and it is very clear that before long some persons will be caught with stock for which they have paid long prices, but which they cannot sell without loss. For the sake of the speculators, we would not care to utter a protest, but for the sake of the farmers, who are in danger of being deceived and misled into a false idea and estimate of this stock, we would remonstrate against both the system of sales and the absurd representations of animals called portraits, which are widely published by the owners in agricultural journals. The system of sales is such that in the total record of a season's business, the same animals may be, and to a great extent are, sold over and over again; one breeder purchasing here and there to make up an attractive addition to his own list of animals to be offered at his own sale. Thus in the lists of purchasers and sellers the same names recur with frequency, and any person who would suppose that the animals sold at the high prices reported are destined for use as producers of butter or beef, would be greatly mistaken. The stock animals that have so improved the quality of American beef as to make it acceptable in the English market, in comparison with the best native beef in that country of proverbially excellent meat, have not been picked up at these sales, but from the herds of breeders who are unheard of or unknown for the most part at these noted and well puffed gatherings. When we referred at the time to the noted sale of the New York Mills Short-horns, we remarked that there was not a herd of Short-horns in this country the value of which was not enhanced by the result of that sale, and we see no reason now to recall that judgment, although we doubt very much if the butter or beef product of the country has been added to in the least degree through any of those high-priced cattle there sold. But that remarkable sale gave a wonderful impulse to the popular knowledge and appreciation of Short-horn cattle, and it is since then, rather than before that time, that the demand for bulls for the improvement of our native stock has become staple and settled. This demand would continue to increase if there were not another public sale of fancy animals, or if all the high priced fancy stock of the present popular families were never heard of any more. Nevertheless, there can be no objection for wealthy breeders to make a special pursuit of keeping up a herd of the fancy strains, if they are competent to improve the stock, but there are very serious objections against the present practice of making the Short-horn the foot-ball of speculation, or the prey of any person who, simply for the sake of making money, buys stock without judgment, to couple them without knowledge, that he may dispose of the produce at a profit by virtue of its pedigree. There is danger that the best blood of the race may be injured or ruined, and in time that a lot of ill-bred, degenerate animals may be cast loose to still further degrade and impoverish the stock. We have not yet found a breeder of fancy Short-horns who would be willing to have an accurate portrait of his stock published. A photograph of one of their animals, although it may be taken by the most competent of artists, or one whose pictures of other animals have been in every way true and satisfactory, would be refused as not at all equal to the required standard. The "mold of form" desired is something entirely different from the counterpart of nature, and the standard fixed upon is one that defies all the laws of anatomy. These efforts of art are simply parodies upon nature, and can scarcely deceive the most ignorant. It can only be that the intention is to misrepresent and to induce persons to believe that the animals thus misrepresented are different from what they are. Photography gives as nearly accurate a picture of the animal as can be desired. The proof of this is given in the life-like portraits of many favorite Jersey bulls and cows made by Messrs. Schreiber & Son, of Philadelphia. That a Short-horn may be successfully photographed is shown by the portrait



SHORT-HORN COW "VIVANDIERE."—*From a Photograph.*



SHORT-HORN COW "VIVANDIERE."—*From a Painting.*

on the previous page of a noted cow, "Vivandiere," owned by Mr. Outhwaite, of England, which, with the accompanying copy of a drawing of the same cow, were originally published in the "London Agricultural Gazette." That the photograph shows the cow, is plain to any one who knows a cow, and that the picture is an exaggeration, is equally plain. But this exaggeration is passable compared with that of many portraits published in this country which are simply absurd impossibilities, to which an artist should be ashamed to attach his initials. The Agricultural Gazette has the credit of steadfastly opposing this prevalent fashion of misrepresenting animals in England, and it is fortunately seconded by many of the best and most popular and successful breeders, among whom Mr. Outhwaite, the owner of "Vivandiere," is one. Unfortunately this cow, the most successful prize taker for many years in England, died in consequence of the injury to her constitution by over-feeding to maintain her in show condition. The amount received in premiums by this cow was $5,357. The Shorthorns have qualities and excellencies sufficient to enable them to stand upon their own merits without exaggeration, both in portraiture and in estimated value. It is an injury to them to be misrepresented by the artist, as it is also to be made the object upon which financial speculations can be fastened, and it is to be hoped that before long they will be freed from both of these oppressive inflictions, and given the honest and respectable position they so well deserve.

Among the Farmers.—No. 8.

BY ONE OF THEM.

We are in the midst of a protracted drouth, but all hope and pray we may be nearer its termination than "in the midst" would signify. Yesterday was the hottest day that I remember to have experienced in the country in this part of the world. One summer spent in Louisiana is looked back upon as an exception. We had yesterday a pretty steady *north-west* wind which was hot like the breath of a furnace. The parched landscape fairly quivered under the heat. The corn leaves were curled to mere lines, and the dry pasture and mowing land from which the grass has been cut, turned a shadow or two browner or yellower before noon. It is twenty-four days since we had a cool day, and as long since we had a soaking rain. Gardens are dried up, peas a failure, beets cease to grow, tomatoes only survive, but cucumbers and musk-melons seem to flourish as well as if we had rain, but water-melons suffer.

This farm is situated upon a gravelly hill-side, gently rolling, with plenty of springs, which indicates that the ground is underlaid more or less with water. The result is that trees do well, for after they are well established, their roots go down to a never-failing supply of moisture. I have no doubt the roots go down at least 15 feet for water through rather a coarse, hard-packed gravel. On all sides I hear complaints that the dry weather is causing apples to drop badly, mine drop too to some extent, but it is from worms, and not the drouth. Every one that falls has one or more larvæ of what I suppose to be the codling moth, so I presume the drouth is blamed elsewhere for what is not its fault.

On such soils as we have underdraining does not seem to make the land withstand dry weather better than before. Irrigation is probably the only solution of the problem: How to make ourselves and our crops independent of the season, provided only we have heat and light enough, which we seldom lack. The difficulty I find with this is, that the soil is so porous that it is necessary to carry the water in pipes, and distribute by a hose. We have no clay, or after a while I might hope to get the channels to hold water. I have not much experience as yet in irrigation, but this fact forces itself upon me, namely, that everything that has been judiciously watered has thriven during the dry weather beyond comparison.

Mr. Taylor's Dairy.

In the month of June I was at Mr. W. S. Taylor's stock farm, "The Elms," near Burlington, N. J. He has fine cattle, and horses, sheep and swine, but what interested me particularly, was the dairy, which is constructed upon plans furnished, and I believe patented, by Mr. J. Wilkinson. It is connected with an ice-house, and is dependent for the excellence of its operation in part upon the ice, but to a greater degree upon air ducts laid for a long way underground at a depth sufficient to secure the same temperature throughout the year. The dairy is half underground, probably 7 feet below the general level. The ground slopes somewhat towards it, and it is entered by a descent of 5 or 6 steps. The walls are brick below ground (possibly stone), and wood above well furred off and rendered in a great manner impervious to heat. The floor of the dairy is perhaps two and a half or three feet lower than that of the ice-house, and a tank of 3 feet in width by some 20 inches deep, extends from under the center of the ice-house to past the middle of the dairy. This takes the drip of the ice, and is kept full by it and at a temperature of about 50° or less, according to the thawing of the ice. This would naturally have a tendency to keep the temperature of the dairy low, as would also its mere proximity to the ice-house. But the walls of the ice-house are thick, and as thoroughly non-conductors as possible, so little cold comes from them.

The remarkable feature of the structure is the ventilation. To secure this, pipes are laid for a distance of not less than 100 feet, but to distances securing sufficient fall in different directions. One brings air in warm weather *down* to the dairy, the other conducts it away also at a fall. Slate is found to be the best material for these ducts, and they are laid so deep that the warm air entering at one end is deprived of both heat and moisture before it reaches the dairy. Here it flows in in a steady stream, and without other sources of cold, would bring the temperature to about 60° or 62°, and maintain it there. Of course doors and windows close as tightly as possible, and should be double. When both ducts are open and in order, the conditions for a regular and rapid flow of air are established. The air in the lower part of the upper duct is colder, hence heavier than that in its upper and outer portion, hence it settles into the dairy room; here it is still further cooled by the cold water tank, and flows out through the opening connected with the descending air duct, and through this to the open air.

In winter the atmospheric conditions are reversed, instead of the outer air being hotter than the earth, it is colder, and so the air in the ducts becomes warm, hence lighter, and rises throughout the whole extent of the underground system, including the dairy in its course, keeping the air therein at or about the same temperature as the earth. The ends of the ducts are protected against the direct action of the wind, which otherwise might occasionally reverse the current. Should occasion require at times greater coldness in the air of the dairy than it receives from the earth, a duct is provided into which the air may be turned before it reaches the dairy. This circulates back and forth between the plank floor and the cement floor of the ice-house, and the air is then thrown into the room at about the temperature of 40°.

This system involves building a good dairy separate from the dwelling, not necessarily in connection with an ice-house, but preferably adjoining one, or a cold spring. Mr. Taylor's is certainly inexpensively, but thoroughly well built, and I was greatly pleased with its results, which are entirely satisfactory to him. I may add that the whole establishment impresses one with the idea of comfort and thrift. A remodeled farm-house, neat and tasteful, in the midst of a broad lawn set with well grown trees, roads and carriage drives, in capital order, new barns, cow byres, etc., somewhat scattered, it is true, but on the whole convenient, and particularly excellent stock of all kinds.

The Centennial.

Of course my wife and I took an early opportunity to go to the "Centennial" for a week, and now we want to go again so much that we can hardly wait for cool weather and the period of the cattle shows in the autumn months. Truly here one finds himself among the works of the farmers if not as much as he might wish "Among the Farmers" themselves. What astonishing exhibitions some of the Western Agricultural States do make! Among them that of Kansas stands preeminent. In all these exhibitions of produce one sees few farmers, but is elbowed by crowds of city people. It is among the implements that one must go to see the producers. Farmers who come to this great show from other motives than mere curiosity, cannot keep away from the labor-saving implements. What a temple to labor and its results is the Agricultural building! It is meet that it should be the most impressive and imposing of any. Not exteriorly, for one is disappointed in the outside, but within. If "work is worship," as Mr. Longfellow holds, surely here is a fitting temple. Its broad aisles flank broader naves crossed by airy transepts, with circles, rotundas, and fountains in the intersections; the whole extending over twelve acres of ground. Nickel-plated plows with carved oak and rosewood beams don't strike farmers as practically good. There are plenty that are practically good, however, and as one wanders through a wilderness of mowers and reapers and harvesters, in the full clatter of make-believe work, he is sure to lose his way unless he gives his mind to not losing it. Who does not enjoy being lost in such a place? I am sure we did. After all, the Agricultural Department is not the place for farmers and their families who visit the exhibition to spend their time most improvingly. Any one of the other departments contains more that is new to us, and calculated to give us clearer and more correct ideas of other nations than our own. I noticed, and fairly grew nervous, or at least distressed, over a tendency in farmer folks to dwell upon and examine things which they might be supposed to be familiar with more or less, and to ignore the most wonderful and beautiful classes of objects of which it is quite certain they could know next to nothing. This tendency is a natural one, perhaps, but I must believe abnormally developed in us. We are not willing to admit even in our inner consciousness that we are ignorant. This feeling will result in the exhibition proving not nearly so instructive as it might be.

The manner in which the British display is classified and labelled is a lesson to our people, and it is certainly to be hoped that some means will be taken to make the American "exhibit" more instructive in all departments. For instance, if, as is the case with Queensland, or Victoria, localities in our own country making any notable exhibit, were indicated upon a map hung contiguous, visitors could see at once where they are, their relation to the seaports, to the great internal lines of travel and centers of population. Trenton makes a great show of pottery, remarkable for excellence and cheapness rather than beauty. Where is Trenton? There should surely be a large outline map of New Jersey showing its rivers, canals, and railroads clearly marked and having Trenton enclosed in a bright red circle, while in one corner the State itself should alone be colored in a small outline map of the United States. We are all supposed to study geography, even if we are for some years out of school, but I confess it was a satisfaction to me to see Tasmania and Queensland, and all the other British provinces clearly indicated upon maps. Besides, for the instruction of the people, we need at least in the American departments, *more reading*. We are great hands to ask questions about things which are of no earthly consequence, and yet pass through these crowded aisles interested and wondering at many things, and ask no questions about those of which we know the least. I notice where there are cards giving explanations, they are always read, and thus comparatively unimportant things are seen and studied, while others are neglected and passed by unnoticed. This is being in some measure remedied I believe; it certainly should be, for in this regard foreign exhibits are generally superior to ours, as they are also in having numerous attendants whose business it is to explain as well as to sell or take orders.

While in Philadelphia I took a run out to see

Mr. Chas. Sharpless and His Jerseys.

I knew that one or two of his famous old cows were dead, but was really surprised to find that the dreaded milk-fever had been so fatal with him. His herd is and always has been a small one, but exceedingly choice. They are generally of solid colors—"Dairymaid"—bought at Gilby's sale in England, and imported at a heavy cost, does not disappoint one. She is certainly one of the most beautiful Jersey cows I ever saw. "Black Bess" is a dark mulberry-brown cow of nearly perfect form, but small, and there is certainly not an inferior animal in the herd. I could but say to myself, "I wonder what Mr. Gilby would say to breeding 'Dairymaid' to a nearly black and white bull?" "Dairymaid" has been bred with extraordinary care to retain, with her solid colors, great milk and butter qualities. It is the combination of these that really gave her her value in England; now to throw all this away by breeding her to a piebald bull of such a bad color, strikes me as extraordinary. Nevertheless, Mr. Sharpless will sell his bull calves for more than other breeders can get for their heifers, and the butter record of his herd is so high that it seems like heresy to question his judgment. It was, nevertheless, a great satisfaction to see so fine a fellow saved from slaughter. I hardly know another breeder in the country who would not have condemned him as a calf on account of color alone, for in form he is excellent. I have never seen a better milk mirror upon a bull, and his pedigree all that could be desired.

How do you Value the Milk Mirror?

is a question I often put to farmers and breeders if they do not ask me first. The response generally is: "We like it in both bulls and cows—breed for it; it is certainly no detriment; we never saw a very good milker with very poor marks, though occasionally a poor milker will be tolerably well marked; it is a sufficient indication to be a valuable milk point, taken in connection with others"—and to that effect. "Which would you rather have, a fine milk-mirror or large milk veins?"—This question is invariably answered by practical men, giving preference to the veins. Nevertheless, they are seldom met with (the big veins and good mirror) separated. It is, however, no doubt true that a great milk-secretion requires a great flow of blood through the udder, and in its return to the heart, the greater portion of the blood passes through the milk veins below the abdomen, hence in large milkers they must be large.

A Cow with the Garget.

On getting back from the Centennial, I found that one of my best cows which had never showed a symptom of caked bag before, except perhaps for 24 hours at calving, had had a terribly inflamed udder, which was still swollen, caked hard, feverish, and from yielding 12 quarts, was giving barely 3 pints of milk from three teats. We fed poke-root, kneaded, rubbed, gave laxative medicine, and she improved rapidly, but one-quarter of her bag does not give milk, yet a watery fluid flows from it when the cow is milked and it is thoroughly worked. So long as this evidence of inflammatory action exists, I shall feel encouraged to hope that the quarter will not be lost. Speaking of the case to my neighbor, Mr. Farlee, he told of a curious case which occurred in his own herd. After an attack of garget, one-quarter of the bag remained swollen and grew worse. It finally suppurated at a point about midway of its hight, and again close to the teat. Between these openings he passed a narrow strap of leather, to prevent any possibility of healing from the outside. The suppuration continued until finally apparently the whole inside lining of that quarter of the udder sloughed off in pieces large enough to exhibit the structure-like ramifying tubes, and a sort of honey-combed appearance. After this the interior of the udder healed, a flow of milk began to mingle with the pus, the strap was withdrawn, and before long the openings closed in a healthy way, and that quarter has since been nearly or quite as good as ever. This is an exceedingly suggestive statement, and indicates to my mind a treatment for lost quarters which I shall try some day if I have occasion, after consulting a Veterinarian or a good physician. I would put in a rowel, and try to excite a similar sloughing of the inactive coating upon the interior.

In my last I had something to say about

Orloff Carriage Horses.

I have recently had the pleasure of examining a stallion of the breed imported by Mr. Robins Battell, through Mr. M. C. Weld, of New York. He is an exceedingly fine animal, and his fine style, and high, fast, showy action, are admirable. He is coal-black, with a well set head carried high, great breadth of chest, muscular forearms, flat, clean bones, small hoofs, a well rounded barrel, broad loin and rump, and is every way powerfully formed as well as graceful and beautiful in his carriage. With such a horse with a pedigree as he has, running through 10 generations of named ancestry on the sire's side, and 8 on the dam's, one may calculate with great certainty on valuable results, with almost any mares, but upon our best trotting blood, say "Star," "Messenger," "Black-hawk," or "Hambletonian" mares, it would seem as if we might almost certainly predict a combination of high speed and great style. Time will show. Mr. Battell has been prominent among Connecticut men of wealth and position for his earnest efforts to improve the horses of that State. He is a real lover of the horse, and has made this importation because he has long felt that such an experiment ought to be tried, in order that our justly famous trotting stock may be increased in size, style, and action, in beauty and usefulness, so that if a colt falls short of trotting "low down in the twenties," he may still bring a good price as a stylish and beautiful coupé or carriage horse.

Peruvian Guano.

The deposits of guano which were discovered in the islands of the Pacific Ocean, contiguous to and belonging to Peru, over 30 years ago, are now all but exhausted. Recently, however, large deposits of guano have been discovered upon the mainland of the South American Continent, which promise to furnish supplies for many years to come. Unfortunately, these newer deposits have been found to be of inferior quality to those first discovered, and much dissatisfaction and great complaints have been the consequence. The consumption of guano has been of late much less than it would have been had the quality remained as at first, and the Peruvian Government and their agents have taken great pains to improve the character of their present product, and to regain the confidence of farmers. To this end the guano was submitted to a process called "rectification." This consisted in treating it with sulphuric acid, by which the ammonia became fixed, or non-volatile, as a sulphate of ammonia, and the phosphoric acid was rendered much more largely soluble in water than it was before, being brought into the condition of that contained in the best superphosphates. The "rectified" guano contained on the average 10 per cent of ammonia and 10 per cent of soluble phosphoric acid. This being in fertilizing properties, considerably below the old value of guano, the price was reduced in proportion, so that farmers should pay the same price as before for the ammonia and phosphoric acid the guano contained, these being really the principal constituents of value to them. This innovation, which was first introduced into England, Germany, and France, has for some time been in practice here with the best results, and the consumption of guano has recently kept pace with the increased confidence of farmers in it. But something else remained to be done to put the sale and use of guano upon a perfectly satisfactory basis. This was that the different qualities should be guaranteed, and that each different quality should be sold at a price that would be equivalent to its actual fertilizing value. The agents of the Peruvian Government in the United States, have now met this requirement by adopting the following method of preparing, assorting, analyzing, and disposing of the guano. As the crude guano on its arrival here unavoidably contains some lumps and stones, it is now crushed, screened, and all foreign matters removed. Each separate cargo is sampled and analyzed, and the different qualities assorted, and as it is bagged, the actual constituents are marked plainly upon the bags. The quality thus ascertained by actual chemical tests is guaranteed to be exactly what it is represented to be upon the bags. The prices are fixed, according to the guaranteed quality, at the following rates per pound of the different constituents, viz: for ammonia, 17½c. per lb.; for soluble phosphoric acid, 10c. per lb.; for reverted phosphoric acid, 8c. per lb.; for insoluble phosphoric acid, 2c. per lb.; and for potassa, 7½c. per lb. By "reverted" is meant phosphoric acid that has been soluble in water, and which now is not soluble, but which becomes soluble very easily when mixed with the soil; it is therefore only of very little less value than perfectly soluble phosphoric acid. The prices stamped upon the bags are the retail prices in all the ports of the Atlantic States; at interior towns the freight thither will of course be paid by the purchaser. This manner of treating and offering guano removes the objections to its use, which have heretofore existed, and places it honestly, as it ought to come, before the consumer. The variable qualities which arrive enable the farmer to procure an article exactly suited to his needs, either one rich in ammonia, or one rich in phosphoric acid. He can select what he wants, paying its exact value, while previously, he had just what happened to come to hand, and paid for a poor article precisely what his neighbor paid for the best. Lest fraud might be committed by unprincipled dealers, the twine with which the bags are sewn, is fastened at each end with a leaden seal, so that detection must follow any tampering with the bags. We have always considered Peruvian guano as the most effective of the artificial fertilizers, and have been better satisfied with it than with any other, when used for general, and not special purposes. As a complete fertilizer, naturally combined in very effective proportions, it is of the highest value, and as a help to, or a substitute for, farm-yard manure, or a stimulant to failing crops, it has uses for which no other special fertilizer can be substituted. The manner in which it is now put upon the market will doubtless increase its consumption and bring it into use with many who have previously feared to touch it.

The Manufacture of Potato Starch.

The potato is generally considered only as an article of human food. As a food for live stock it is, considering its nutritive value, too much neglected. As the raw material for the manufacture of starch, gum, dextrine, and alcohol, it is not nearly so much used in this country as it might be, or as it is in European countries. The cheapness and ease with which it may be grown, should make it a profitable product, if its value were completely developed, by applying it to all its possible uses. To do this most completely is hardly within the farmer's province, but yet to a certain extent he may not only properly, but profitably, thus employ his energies and capital. To use these tubers as food for stock, in every possible way, would seem to be so plain a duty and so profitable a business, that it should hardly be necessary to call the attention of farmers to it. Nevertheless, it is rare to see any provision made upon a farm either for growing this crop for fodder purposes, or for using it in that way. Still rarer is it grown for the industrial processes mentioned above, but as starch is a staple product, always in demand, and salable at a remunerative price, it is certainly to the interest of farmers who live in a district where the soil and climate are favorable to the growth of the best quality of potatoes, to endeavor to utilize their crops in this manufacture. With a view to give the information necessary for a clear understanding of the machinery, processes, and cost of a starch manufactory, and in reply to many inquiries, we have prepared the accompanying illustrations, describing a Potato Starch Factory

in Vermont, in which State and in New Hampshire this business is somewhat extensively carried on.

Potatoes contain variable quantities of starch, or from 17 to 24 per cent, according to their specific gravity, or heaviness and solidity. This is a very important consideration, for the difference, amounting to nearly 50 per cent upon the least quantity contained, is sufficient to make the business profitable or otherwise. It is clear, therefore, that only the best grown crops, and those varieties with solid flesh, can be profitably used in the starch factory. Potatoes of a specific gravity of 1.09, (which means that a bulk of potatoes equal with a quantity of water that weighs 100 lbs., will weigh 109 lbs.,) have been found to contain 16 to 17 parts of starch, while those of a specific gravity of 1.123 have contained from 24 to 25 per cent. The amount of starch also varies with the season, and the character of the cultivation given to the crop, for immature tubers, or those that have been exposed to the light, contain much less starch than those fully ripe, well grown, and free from disease, the difference sometimes amounting to one-third. In this, as in all other instances, the fruits of labor are better and more profitable as the labor has been well or skillfully applied. As soon as the potato is perfectly mature, it is richest in starch, and after that moment the amount of starch becomes less, more especially if germination of the eyes or buds commences; freezing destroys the starch altogether.

The building needed for a starch factory may be as plain and cheap as is consistent with the proper shelter and accommodation of the machinery, the necessary storage of potatoes during the working season, and the care of the finished product. But little expense need be incurred in this direction, further than to make the building strong enough and water tight. As a large quantity of water is needed in the process, a good water-power, which will supply both motion and water for washing, is most convenient. As a rule the potatoes grown by the farmers near the factory, are sold at a stated price, and delivered as they may be required through the season. From what has been stated already, it is evidently to the interest of the careful farmer who grows the best potatoes, to sell his crop by weight, and greatly to the interest of the manufacturer to procure only the heaviest potatoes.

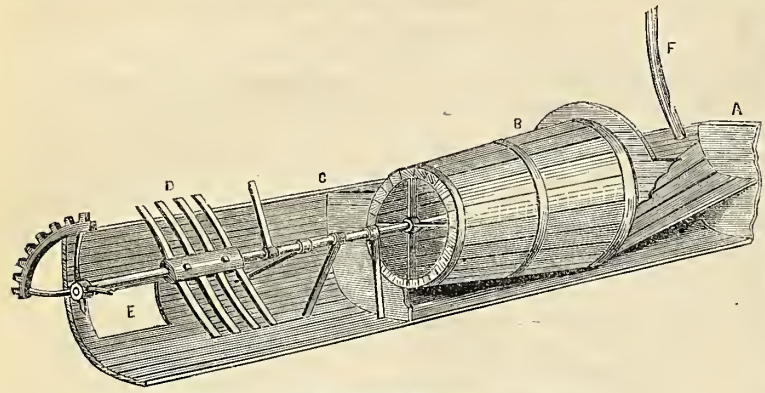


Fig. 1.—MACHINE FOR WASHING POTATOES.

The first process is washing the potatoes. This is done in the washer seen at figure 1. The potatoes are put into the washer at *A*, passing through the funnel-shaped tube *B*, which is placed in a box or trough *C*, half of which only is shown. The potatoes are exposed to a stream of water as they pass through the washer and out of the smaller end, from which they are raked by a revolving rake *D*, into the opening *E*, falling into the grater shown in figures 2, 3, and 5. The potatoes are reduced to pulp by the grater *A*, fig. 2, a disc of perforated sheet iron, which revolves rapidly on the shaft *B*, in a strong curb, *C*. The potatoes are held against the grater by the stationary arms *D*, and the grated pulp falling into the tin box *E*, fixed around the edge of the grater *A*, is discharged at *F* into the sieve *G*, fig. 3. A sheet of water falls into this sieve from *H*, and a shower or sprinkling from *I*, the sieve being constantly shaken by the rod *J*. The consequent washing of the pulp separates the starch granules from their enclosing cells, which are broken up by the grater, and the granules being smaller than the fragments of the cells, fall through the sieve, while the refuse is discharged at *K* as waste. Potato starch differs from all other kinds of starch, both in the size of the granules and in their shape. A thin slice of potato placed beneath a good microscope, appears as shown at figure 4, in which are seen the cells packed full of starch granules of different sizes, the largest of them being 1-300th part of an inch in length. The granules are shaped much like a shell having lines drawn irregularly around a point, as seen at *a* in the figure. It is very easy to distinguish potato starch from all other kinds by the aid of a good microscope, and it is also easy to understand by this illustration how the process of grating and washing breaks and tears apart the walls of the cells, and releases and separates the starch from the cellular matter of the potato. At *L*, fig. 3, is shown a portion of the grater, with its half cover, *M*, raised. At fig. 5 is given a ground plan of the washer, grater, and sieve; the washer and trough at *A*, the gearing at *B*, the crank which moves the sieve at *C*, the grater at *D*, the sieve at *E*, the box from which the sheet of water escapes at *F*, the sprinkler at *G*, and the dotted line *H* shows the position of the cistern into which the starch falls and is kept constantly stirred by means of an agitator shown at figure 6. The mixed starch and water is pumped into large vats *I*, *I*, on the same floor as the washers, in which it is left to settle during the night. After the starch has subsided, the water is drawn off by siphons to within 2 feet of the bottom of each vat. The remainder is stirred and pumped into smaller vats, *A*, *A*, *A*, fig. 7, in which it is again stirred, and again left to settle for six hours or more, when the water is drawn off as before by siphons. The still impure starch left, called "grains," is removed to larger vats, again washed, stirred, and settled, and the purification is still again repeated until perfect, when the pure starch is removed in wheel-barrows to the kiln, fig. 8, to be dried. In the kiln there are three racks, *A*, *A*, *A*; the wet starch being placed on the highest one, is stirred, and as it dries falls through the openings on to the one below, from which it falls to the lowest one, and from that on to the bottom of the drying chamber, *B*, from which it is gathered up and packed into barrels. Sometimes the starch is dried in solid masses, in which it undergoes a sort of crystallization, and falls into those well known shapes in which it is offered for sale for laundry purposes. A ground plan of the kiln is shown at figure 9; the shelves are seen at *A*, *A*; the alley ways, 5 feet wide, at *B*, *B*; the walls are lathed and plastered, and 18 feet apart; the doors of the kiln are shown at *D*; the furnace, *C*, is simply a large box stove, enclosed for safety within brick walls, as seen at figure 10. The furnace is in the basement of the factory, and the brick casing opens into the floor above, where the drying chamber and racks are placed, as seen at figure 9, *F* being the chimney and *E* the brick-wall. There is no simpler manufacture than that of starch, the process being solely the breaking up of the cells of the potato by grating, and the separation of the starch, which is insoluble in cold water, from the cellular substance by washing, and finally the drying and packing of the starch for market. The starch of the potato is used for food as well as for the well known purposes of the laundry, and frequently appears in the shops as the West India arrowroot, which is a kind of starch made from the root of a plant known as *Maranta arundinacea*, and for which it is substituted.

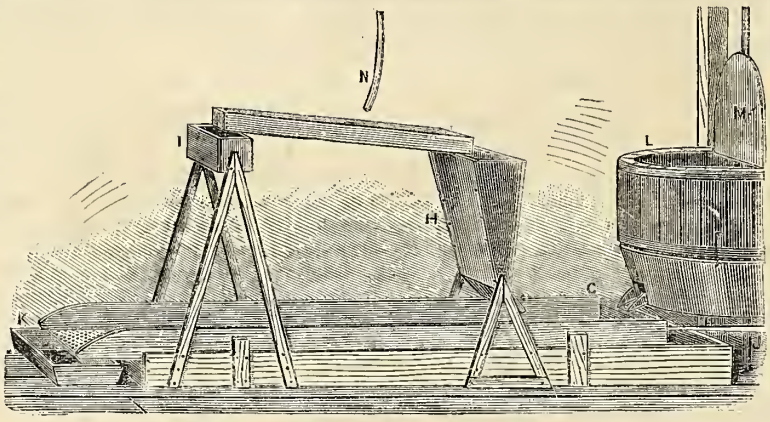


Fig. 3.—SIEVE FOR SEPARATING THE STARCH.

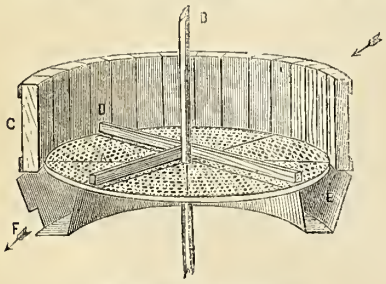


Fig. 2.—THE GRATER.

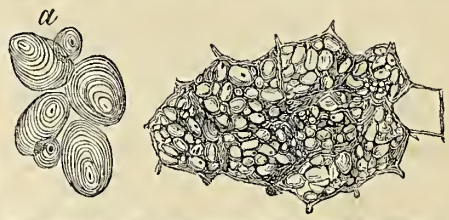


Fig. 4.—CELLS OF POTATO AND STARCH GRAINS.

Potato starch is also used as an adulterant in the manufacture of cocoa and chocolate, but however used, the peculiar shape of the granules leads to its easy detection. The waste of the starch manufacture contains all the fertilizing matter that has been derived from the soil or the manure, such as nitrogen, potash, and phosphoric acid, and is well

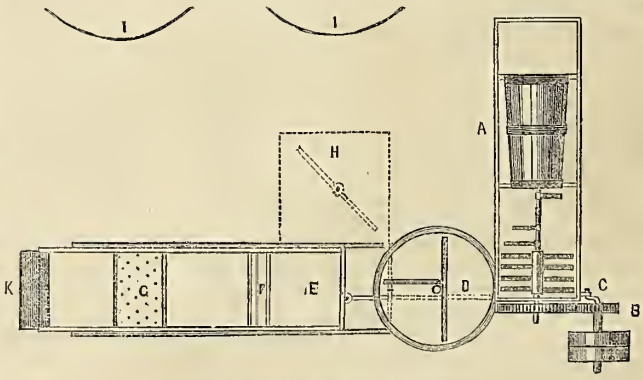


Fig. 5.—PLAN OF THE WASHER.

worth saving and returning to the soil as a fertilizer. When heated up to 400°, starch changes to a gum which is often substituted in the arts for gum Arabic, and when treated with diluted sulphuric acid, it is changed to a species of sugar known as grape sugar, which, when fermented and distilled, produces alcoholic spirits. Thus the starch of potatoes becomes itself a material for the production of other valuable substances, all of which go to add to the economic value of a very important agricultural product. A century ago the potato was known only to botanists and to a few gardeners as a curiosity, and but two varieties were grown. The above sketches were made up at the factory of Messrs. G. & F. Wooster, of Marshfield, Vt., which has a capacity of working up 1,000 bushels of potatoes weekly. One bushel of potatoes produces 6 to 8 lbs. of starch, the actual yield in the factory not being equal to that made in the laboratory. At 6 cents a pound for starch, potatoes will yield to the grower 25 cents a bushel, and a fair profit to the manufacturer.

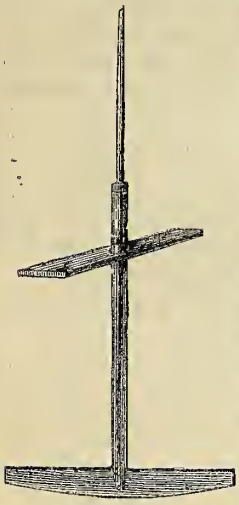


Fig. 6.—THE STIRRER.

Study your Markets.

It is true that many of the towns remote from market in New England are on the wane, and some of them half deserted. There is more wood and timber on them than there was fifty years ago, which is some compensation for their desertion. Farms can be bought now from ten to thirty dollars an acre, which is much less than they were worth before the buildings and fences were put up. It is hard times in these towns. It is difficult to sustain churches and schools. Town taxes are about what they were when the grand list was double what it now is, and the population a third greater. It is hard to collect taxes without the aid of the sheriff. Mechanics have moved out for want of support. The boys do not go to college, and professional men have no successors. The cause of this decadence lies in the farmers, and not in the farms. Instead of studying their own markets and raising what they could sell at a profit, they kept right on raising grain and pork, as if they had never heard of the great corn-growing States, where ten cents pays for a bushel, and twenty cents gives a handsome profit, and pork is sold at four

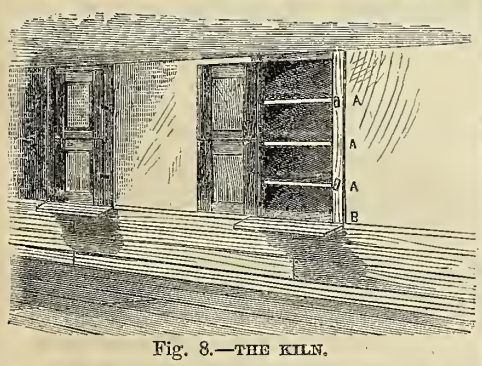


Fig. 8.—THE KILN.

and five dollars a hundred. Competition with the West is folly in this era of cheap transportation. Corn raised in Kansas is sold in these towns at sixty to seventy cents a bushel, paying a profit to producer, middleman, and railroad. But we are by no means shut up to the production of the few crops which the prairies can produce cheaper than we can. They cannot compete with us in the production of milk for our city and village markets. So long as the dwellers in our large towns have to pay eight to twelve cents a quart for their milk, there is a large margin for profit. Poultry and eggs pay well on these farms, or would, if the men had enterprise enough to invest in the stock. Turkeys have just what they want, plenty of range in wood and pasture. Waterfowl have running brooks and ponds, and low wet lands. Hens find their paradise about old barns and sheds, and brush pastures. Choice butter pays extra prices in all our Eastern towns, and the market is practically unlimited for the gilt-edged article. The West cannot supply our Eastern markets with fresh lamb, mutton, veal, early chickens, and roasting pigs. The range of articles needed in our home markets that would pay handsomely is wide enough to employ all the capital and labor of these waning towns, and much more. There are exceptional cases of skill and thrift in almost all these towns, and it is these men that study the markets, that prevent these towns from becoming a wilderness. One sees an unlimited demand for roadsters and carriage horses, and makes these a specialty. We know of one who has made thoroughbred Devons a leading business for twenty years. It pays. Many thrive by poultry, and market from four to eight hundred dollars worth every year. It is not a very difficult thing to find out what will pay. If a man will do this, and put his money and brains into it, he will succeed, and make the wilderness blossom again. We must take the papers and study the markets. CONN'T.

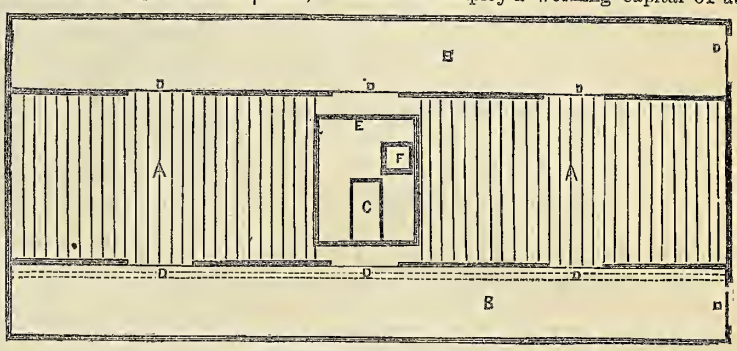


Fig. 9.—GROUND PLAN OF KILN.

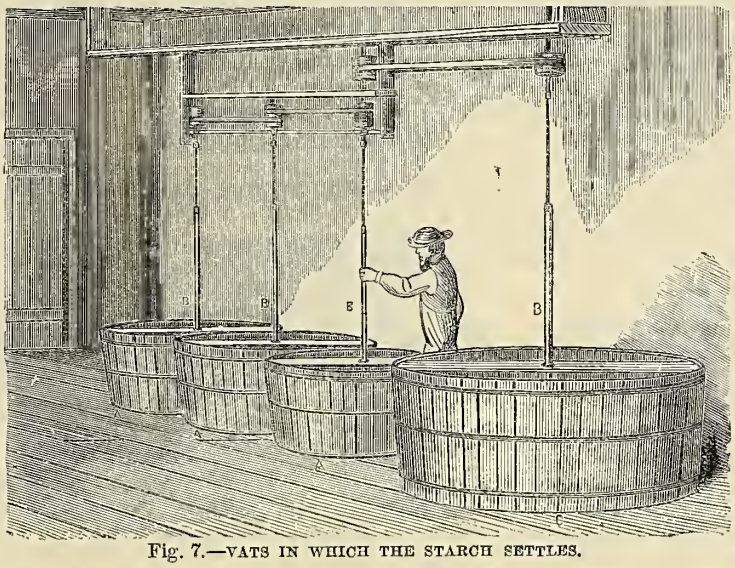


Fig. 7.—VATS IN WHICH THE STARCH SETTLES.

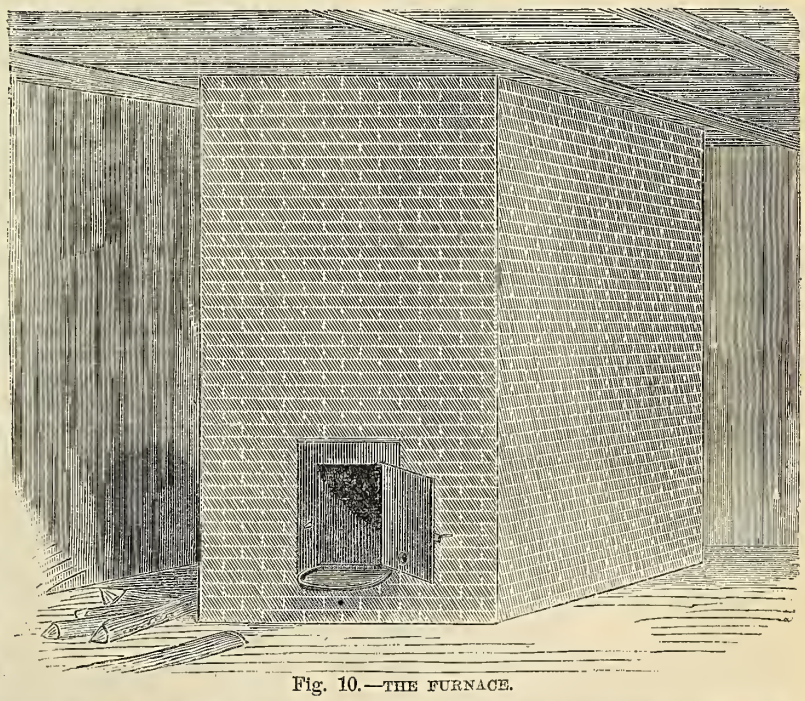


Fig. 10.—THE FURNACE.

FARMING IN ENGLAND.—The American farmer in reality occupies a very comfortable position as compared with an English farmer. An English farmer does not own his land, except in very rare instances, and is obliged not only to pay a yearly rental of $20 to $25 per acre for a fairly good farm, but to keep the hardly worked land in good condition, is forced to employ a working capital of at least $50 an acre, to be expended in artificial fertilizers, and purchased foods with which to make manure. In addition, he is prohibited by law from killing wild animals, such as rabbits, hares, foxes, partridges, and sometimes pigeons, while his cats and dogs are killed by his landlord's gamekeeper, lest they might injure the game. This game feeds upon the farmer's crops, and he must submit to see his fields sometimes ravaged by them. The farmer is forbidden to raise such crops as he may wish, but is obliged to raise such as his landlord considers best for the land. He is forbidden to sell hay, straw, roots, or other crops which are usually fed to stock, these being consumed on the farm. He is bound to all these requirements by an exacting lease, which makes him a species of serf to his landlord, and when his lease expires he may be ousted from his farm without receiving one penny of compensation for any permanent improvements, such as drains, buildings, fences, or fertilizers, that he may have made. To crown all, the instrument by which he is bound hand and foot in this manner is made at his expense by a lawyer. In a recently reported case, the lawyer charged $140 for drawing the lease, $28 only of which fell to the landlord's

share to pay, by a voluntary friendly act on his part. This lease, which almost any intelligent man could draw up, the farmer or his landlord is forbidden by law to write himself under a penalty of $100, which he would be obliged to pay if he neglected or refused to employ a lawyer to do the unnecessary service. Considering the relative positions of the two farmers, an American farmer who grumbles at his free and independent position, owning his farm, and being subject to no restrictions whatever, simply does not know when he is well off.

Substitute for Hay.

The great drouth along the sea coast has made a very short hay crop, and raised the price of that article. Hay is selling in many places at twenty dollars a ton from the field, which indicates thirty or more as the winter and spring price. Meanwhile corn is quoted at fifty to fifty-five cents in the city, and is delivered in bulk at the sea-ports for about sixty cents a bushel. This is but a little over twenty dollars a ton, and is much more profitable for feeding than hay. It is very largely used when hay is under twenty dollars a ton, and the use should be increased as the price of hay rises. The reports of the corn crop in the prairie States are highly favorable, and prices are likely to rule low. With cheap corn there is no need of paying high prices for hay. Straw, corn-fodder, swale, and salt hay, may all be used to advantage in preparing cut feed with Indian meal. We have no doubt of the economy of using more meal in winter feeding, especially in districts where the hay crop is short.

Sled for Removing Corn-Shocks.

Mr. Thomas H. Speakman, who is the inventor and patentee of an excellent farm and garden fence of posts, wires, and pickets described in the *American Agriculturist* for March, 1873, sends an illustration and description of his sled which he uses for moving the corn-shocks from a field which is to be sown with winter grain. This sled is not patented, and whatever it may possess of value to the readers of the *American Agriculturist*, is freely given by Mr. Speakman. He writes as follows: "The machine which I use for transporting the corn from the

FIG. 1.—SIDE OF SLED.

ground, is simply a sled of the most ordinary construction, and which any farmer can make. It is made of two joists or planks; mine are of hemlock, though oak might be better; say three inches thick (two inches thick would be sufficiently strong and lighter), a foot wide, and 14 to 16 feet long, rounded at one end and connected by three strong cross pieces, being in form just such a sled as a farmer boy would make to use in the snow, with the addition of cross braces before and behind; the under edge of the runners should be rounded off to the extent of 1½ to 2 inches to turn more easily. There should be also short standards before and behind.

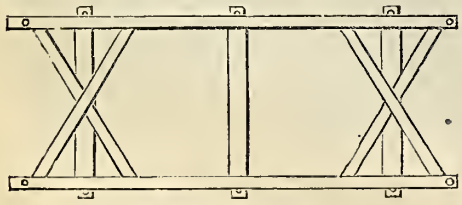


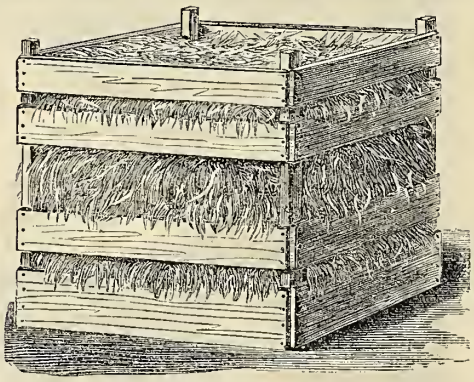
Fig. 2.—TOP OF SLED.

The runners may be 4 to 5 feet apart, according to the length of the corn. A side view of the runner with the standards is given in figure 1, and a top view of the complete sled at figure 2. I first cut off the corn and put it in shock in the usual way, making the shock smaller than usual. I let it stand thus a few days to dry, then a pair of horses are hitched to the sled, which is driven along side the shock. The shock is pushed over on to the sled, and so one shock after another until the sled is full. The load is then driven to an adjoining field, where the shocks are set up on end again, and about four of them made into one and tied at the top, or reared against a fence.

"The particular advantages of this plan are: First, that by use of the sled and method of loading and unloading the shocks, all actual lifting of the corn is avoided, and the labor and expense reduced more than half. Second, by permitting it to dry a few days, its weight is greatly reduced, and the handling much lighter. Third, the corn being partially dried, it can be put together in larger shocks the second time, and will keep better. By this method one man can clear two acres or more a day, according to the weight of the crop."

Feed-Rack for the Yard.

"A Subscriber to the *American Agriculturist*," sends a description of the kind of feed-rack which he uses when feeding hay or corn-fodder, either in the yard or the field. To make the description per-



FODDER-RACK.

fectly plain, we have prepared an illustration of the rack. It is made by setting four posts in the ground, or more, if the rack is to accommodate a large number of cattle; but in this case we would recommend two or more separate racks, in preference to one large one, as more conducive to quietness and order amongst the cattle. To these posts there are nailed boards two high all around; then a space of one foot, and then other boards close together, up to a height the cattle cannot reach. The fodder is thrown into this rack until it is full, and the cattle draw it out as they need it, from the open space between the boards. The fodder is not wasted by being trampled upon, and the stock do not fight over the feed as when it is thrown upon the ground.

Farm Villages.

There is no necessity that farmers should be isolated so much as they generally are, nor any need that the farm buildings should be in the center of each farm. It is simply a matter of figures and calculation, as to whether the saving of a few hours' labor—or a few days in the aggregate—yearly, in hauling the crops to the barn, with the barn and house in the center of the farm, and a mile away from the nearest neighbor, is of more value or more convenient than to have one's neighbors closer and one's fields farther off. There are many advantages in having three or four homesteads contiguous and forming a hamlet, or with a few tenant houses or cottages, a small village. This is especially desirable in the West, where the land was originally so divided that four farms necessarily meet at one corner, where two roads cross. Where farms are 160 acres in extent, there would then be four houses together at every mile; four sets of farm buildings; four orchards, and four plantations, which would condense the shelter provided by these, and make it much more effective than when scattered half-a-mile apart. At or near one of these corners the blacksmith's shop and other conveniences would naturally be located, and in time a farm village would be built up. There would be far better social opportunities than farmers now enjoy, and many more opportunities for combining labor and capital in joint enterprises. The scattered appearance of the houses in the early settlement of a new western country, and even of the more substantial homesteads of an older one, is one of the most conspicuous disadvantages which strike a visitor from a more populous part of the country. Neither does it improve upon acquaintance, and the necessary isolation is much felt by the new comers. It is convenient to be in the center of one's farm, but it is a question worth considering when a new house is to be built, if it would not be better to build nearer to one's next door neighbor.

Caps for the Posts of Corn-Cribs.

A correspondent who placed inverted tin-pans upon the foundation posts of his corn-crib to prevent access by rats, now that the pans have rusted so as to be useless, asks for some substitute for them. We here describe a simple method of making this. Take a piece of galvanized sheet-iron or zinc, and cut it into the form shown at figure 2, having first measured the post of the corn-crib to find the length that will be needed. This is bent around the post in the manner shown in figure 1, and fastened with two or three small nails. When made of the material mentioned, they will outlast several pans, and cost much less, and will be equally effective in keeping out vermin.

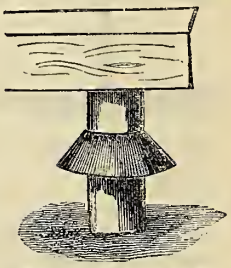


Fig. 1.—CAP ON POST.

Fig. 2.—TIN FOR CAP.

IS GRASS INTOXICATING?—It appears that the genuine good name of the Grass family for innocence and sobriety does not extend to all its members. There is a "drunk-grass," so called by the Dutch colonists, a species of *Melica*, which in some parts of South Africa "intoxicates" cattle to an alarming extent, and the evil is spreading with the increase of sheep-farming; the sheep, we believe, sorting out the other grasses, while they totally abstain from this. The account is given by Dr. John Shaw, in the Journal of the Linnæan Society, vol. 14. In Trimen's Journal of Botany for July last, Dr. Hance—a well known botanist resident in China—describes another grass, a new species of *Stipa*, from Mongolia, which intoxicates horses. A French Roman Catholic Missionary and his party, making an excursion into the Aladian Mountains, north of the Great Wall, one morning found their horses dreadfully debauched—indeed quite *hors du combat*—through partaking freely of this grass. On appealing to a family of Mongols encamped in the neighborhood, the missionary was told that the proper antidote was vinegar, followed by a broth made of a goat's head. No vinegar being at hand, the missionary administered sour milk as a substitute, while the goat's head was cooking, the broth completed the cure, and the party returned safe and sober to Peking, bringing some of the grass, which Dr. Hance christened *Stipa inebrians*. The intoxication and poisoning of cattle, horses, and sheep, in California and Nevada, is said to be caused by some species of the Pulse family, which generally is thought to be as harmless as grass.

INCREASING VALUE OF BLACK WALNUT.—Black Walnut timber has become so firmly established as a desirable material for furniture and cabinet work, that it is not probable that its present high value will be lessened, more especially as the visible supply is rapidly becoming exhausted. Ten years ago,

black walnut timber was bought "on the stump," that is standing in the woods, at two dollars a thousand feet. It is now salable at $30 to $35 a thousand, and for burls or beautifully veined or clouded timber, much more is paid. A tree, 24 inches in diameter, three feet from the ground, and with a stem 48 feet high, will make a thousand feet, and should therefore be worth 30 to $35 as it stands. As it is a rapid grower, there is unquestionably a good profit in planting this timber at the current prices.

Portable and Temporary Fences.

Portable fences are necessarily coming more and more into use, because of their cheapness and adaptation to the more economical and improved methods of cultivation. There is no necessity for more than one fixed fence upon a farm, and that is the outside or boundary fence. We can not see

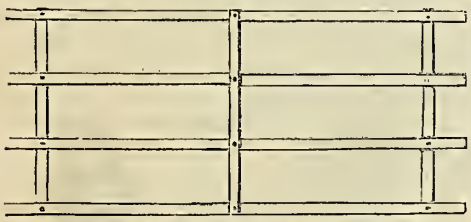


Fig. 1.—BOARD-FENCE PANEL.

that this can be permanently superseded by any method of herding stock, or by any other device; for roads must be traveled, and our neighbors can not be prevented from keeping stock in their fields, or using them as they think proper. A good outside fence is therefore absolutely necessary in any thickly populated part of the country, although a herd-law may be useful as a temporary expedient in new settlements. The most effective, cheapest, and simplest portable or temporary fence will therefore be very desirable, and from amongst the many suggestions we have received for this purpose, there may probably be some that will be adopted and used. A very good one is sent to us by a correspondent at Ganges, Mich., which is illustrated by figures 1 and 2. This fence is used in that part of the country, and thought highly of. It consists of a panel made of fence-boards or edgings, 12 feet long, with the end cross-pieces set in 6 inches, leaving the boards projecting. The posts for the fence consist of two pieces of 2 x 4 scantling crossed at the top, and connected at the bottom by a piece of inch board six inches wide, in which a notch is cut as shown. The fence is set up by resting the ends of the panels upon the posts, and overlapping them in the crotches at the top and the notches at the bottom. End braces may be used here and there in the fence, if thought

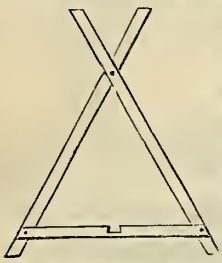


Fig. 2.—SUPPORTS.

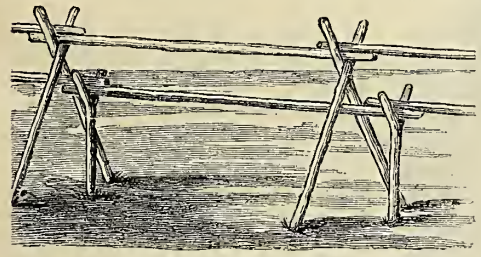


Fig. 3.—SKELETON FENCE.

advisable. Some other kind of fences are suggested by Mr. L. D. Snook, of Yates Co., N. Y. These are not uncommon in the eastern part of the country, and that shown at figure 3 we have used very satisfactorily as a temporary fence to a pasture for horses and cattle. If set up firmly, it will resist as strong a wind as an ordinary rail fence will. It will not, however, like the preceding one, answer for a sheep pasture. It is made by driving short posts into the ground, which should be notched at the top, or else crotched or forked posts should be used; upon these the lower rails

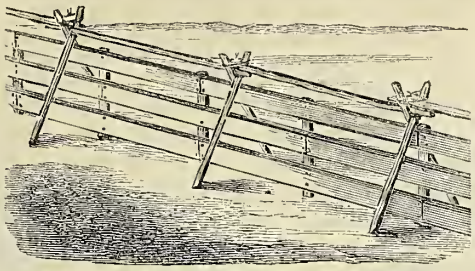


Fig. 4.—STRENGTHENING A BOARD FENCE.

are placed, and held in place by cross stakes over the joints. These stakes should be firmly driven into the ground. The second tier of rails are placed upon these, and we have found this sufficient to keep cattle or horses that are orderly and contented within the bounds of a good pasture. Where the pasture is poor, and a tempting crop of corn or clover is in the next field, no cows or horses will be likely to resist the desire to put their heads through and lift the top rails. In such a case a heavy third rail, placed upon intermediate cross stakes, should be used. Another kind of fence, shown at figure 4, consists of a temporary expedient for increasing the hight of a low fence, when it may be found necessary. This is done by placing stakes at each side of the temporary fence, and laying a rail upon them, which may be held firmly by means of a loop of fence wire, passed around the stakes. A method of adding to the

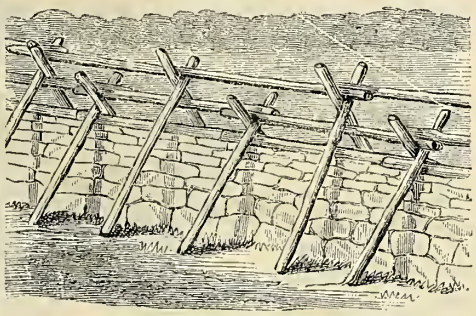


Fig. 5.—ADDING TO A STONE WALL.

hight of a low stone wall, is shown at figure 5. The engraving shows the plan so clearly, that no description seems to be necessary.

Watering Stock.

Water is not often looked upon as food, yet it plays a part in the nourishment of an animal either directly or indirectly in much larger proportions than any other, or indeed all other aliments. An animal deprived of water will perish very much sooner than it would when deprived of solid food. As about 75 per cent of the flesh and blood of an animal is water, and as evaporation from the skin and lungs is incessant and copious, it may be readily conceived how necessary to health is an adequate supply of water. Unfortunately this fact is generally unknown, or is forgotten, or neglected—indeed there are thousands of farmers who actually believe that some of their animals, sheep for instance, require no water at all at certain seasons of the year. There are many farmers who think it unnecessary to give a drink of water to a pig, but who consider the slop it receives as ample for its needs, or that when a pig is fattening, dry food only is needed, and that water makes soft pork. There are many more who are hardly so ignorant as this, yet act precisely as though they were, and neglect to provide any water for their stock but what they can procure from pond holes or sloughs. The consequence is, the immense loss which has befallen farmers, complained of every year as something unavoidable, and for which they look for sympathy. It is very true that if anything that is necessary to health is withheld, disease and death will follow; and it being very true that an ample supply of pure water is necessary to health, and equally true that this is withheld to a very great extent, the consequence is unavoidable. Thus disease occurs in thousands of centers, which spreading around these centers by contagion or infection, becomes general, and is diffused over a large extent of country. In this way the just and unjust suffer alike, and many careful farmers may suffer from the carelessness of one neglectful neighbor. There are many districts, especially in the West, that are but poorly supplied with water. There are many farms well supplied with water, where the appliances for using it are insufficient or badly managed. Ponds of stagnant water are nurseries of disease, and do much mischief. Streams, unless of a peculiarly favorable character, are almost as dangerous and objectionable. Where the banks of a stream are muddy and marshy, and the current slow, the water is apt to carry germs of disease or the eggs of dangerous parasites. Streams that are swift of current and flow over gravelly or sandy beds, are less unsafe, but still not altogether safe, as they may become the means of conveying infection. Springs are not altogether safe, and in some cases are positively dangerous, as when their margins become fouled by trampling and the droppings of stock. Wells are the safest source of supply that can be had. The water of wells is generally filtered through a considerable depth of soil, and is free from contamination by either dead or living impurities. For sheep, especially, no water is safe but that from wells, and as pigs are almost equally subject to parasitic diseases as sheep, well water should be provided for them whenever practicable. The cost of a well, with the requisite power for elevating the water, and some safe, convenient, and economical method of presenting the water to the stock, should be considered as a necessary outlay upon every farm where stock is kept. If a well and windmill could be placed at the point where four farms join, and at the joint expense of the four owners, each farm could be supplied, without inconvenience, at one-fourth of the expense that would otherwise be necessary, and the advantage gained would be secured in many cases at less cost than that of time needed to drive stock to a pond or stream. To have water in the stock yard and in a place convenient of access, is one of the economies of the farm that can scarcely be neglected.

An automatic apparatus for supplying the water troughs and preventing either the waste or the fouling of the water, would be very desirable. To be satisfactory in use, the arrangement for watering should be complete and well adapted for the purpose required. A method of watering stock that we have seen in use, and which we consider to be a very satisfactory one, consists of a well shown at figure 1, with a pump operated by a wind-mill, or by hand, (see engravings on next page); a supply tank or reservoir (*A*), above the surface of the ground, from which a pipe leads to a covered regulating tank (*B*), in which is a valve (*H*), operated by a float (*I*), which admits water from the supply tank when it is opened by the descent of the float consequent upon the lowering of the level of the water. From this tank the water passes to the watering tank (*C*), which is covered (see *N, I, N, N*). A plank floor is laid around this tank to prevent trampling or rooting by hogs, as shown in figure 2, in which is also seen the cover that prevents the animals from using the water improperly. The advantages of this apparatus are: there is no waste of water, as the overflow from the supply tank may be carried into the well again by a pipe; the water in the watering tank is kept at a uniform level within an inch of the cover, and within reach of the stock by means of the float valve; the pipes are below reach of frost; the water is cool, wholesome, always clean, and always accessible and abundant. The apparatus is patented, and is controlled by the United States Wind Engine and Pump Company, of Batavia, Illinois. The cost of the apparatus is not necessarily beyond the means of almost every farmer, as the tank may consist of ordinary barrels, and the pipes and valve may be fitted to them by any person who can use common tools. There are few simple inventions that can be turned to more profitable use than this.

New Raspberries—"Pride of the Hudson."

A friend who has probably had as wide experience in small fruits as any other, claims that there has been no real progress in this department of pomology during the last 20 years. He holds that among grapes there is nothing, take it all in all, that surpasses the Concord; that among strawberries the Wilson still remains the leading variety; that none of the later currants equal the Versailles, and so on through the list. If we take the market-grower's view of varieties, there is a good deal of truth in our friend's assertion, and it is undeniable, that while all of the leading varieties of the different small fruits have striking faults and deficiencies, they have also so many desirable qualities that they are at present, as they long have been, more generally planted than any others, notwithstanding the fact that since these attained the positions they now hold, hundreds of new varieties have been introduced, most, if not all, of which are in some respects better than the standard sorts. While with other small fruits, there is one accepted as the leading variety throughout most of the country, such is not the case with the Raspberry. In certain localities along the North River, the Hudson River Antwerp is the leading variety, excellent, but requiring protection; the Philadelphia, thoroughly hardy and enormously productive, is of very poor quality; the Herstine, of which so much was expected, proves too soft for a distant market, and so on through a long list, each member of which has some fault which prevents it from taking a leading position over a wide section of the country. The desideratum is a berry which shall combine the excellence and firmness of the Hudson River Antwerp, and the hardiness of the Philadelphia, and our fruit-growers have by no means given up the search for it. One of the most promising of the newer varieties is the Brandywine, found near the river of that name at Wilmington, Del. It has suffered in reputation, plants of inferior varieties have been sold for it; it was originally sent out as the Susqueco, the Indian name for the Brandywine, and it is a pity that the name was changed. The berry is of a bright scarlet color, and of remarkable firmness; the plant is said to be hardy. As far as tried, this has proved a valuable variety, as the fruit may be shipped to a distance without injury. There are several new varieties not yet in general cultivation that will soon demand the attention of fruit-growers. One of these is called "Pride of the Hudson," the fruit of which has been exhibited at this office for the past two seasons, by Mr. E. P. Roe, of Cornwall-on-the-Hudson. One cannot speak confidently of a new fruit until he has cultivated it himself, nor can its real value be ascertained until it has been tested for several years in various localities. All that we can do in such cases is to speak of the fruit itself as it is presented to us, and such account of the plant as may be obtained from trustworthy sources. The "Pride of the Hudson" is an accidental seedling found in an old garden in Newburgh, N. Y., belonging to a cousin of Mr. Roe, where it some years ago attracted attention by the vigor of the plant and the beauty of its fruit. Its canes being allowed to grow at will against a grape arbor, reached the length of 10 to 14 feet, and were uninjured in the winter of 1874–5. The leaves are remarkably corrugated or crimped, and have great substance. The fruit is of large size, of a very bright scarlet, and unusually firm. We had no other variety at hand for comparison, but we think that it will take rank in flavor with the best varieties, but rather less juicy than the softer kinds. From the branches shown, the plant appears to be remarkably prolific; the fruit, ripening about a week later than the Hudson River Antwerp, and maturing gradually. Mr. Roe, who has the stock of this plant, presents its claims in a very moderate manner, well knowing that the merits of a variety cannot be decided until it has had extended cultivation. From what we have seen of this fruit, we think he is justified in hoping that he has a valuable addition to the now quite small list of good market raspberries.

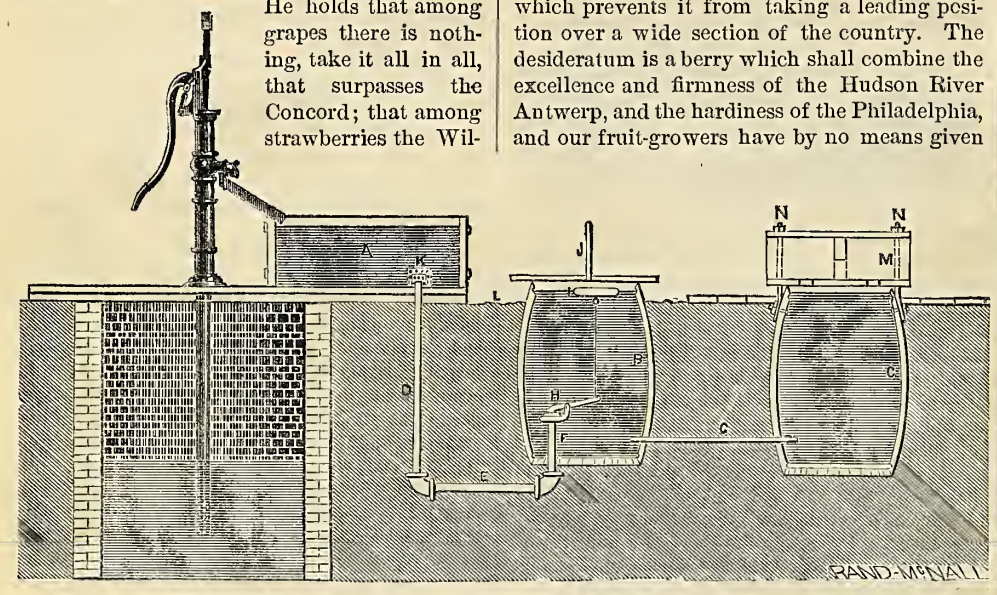


Fig. 1.—SECTION OF WATERING APPARATUS.—(*See page* 339.)

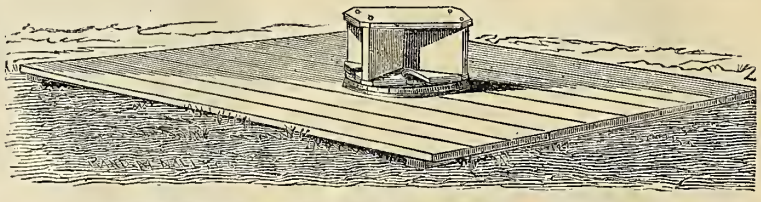


Fig. 2.—PLATFORM FOR WATERING STOCK.—(*See page* 339.)

Messrs. E. & J. C. Williams, of Montclair, N. J., have a new seedling which we are watching with some interest; it has many good qualities, but will not be offered until after further trial. There is another new variety in Westchester Co., N. Y., and others elsewhere, and we hope that among them all, our critical friend above referred to, may find one which shows that some progress has been made in raspberries during the past 20 years.

PRIDE OF THE HUDSON RASPBERRY.

PRUNING THE WEIGELA.—A writer in a recent French horticultural journal gives an account of what he regards as a new discovery in the method of pruning Weigelas. It is to treat them as one would prune a blackberry bush, *i. e.*, cut out the old wood after flowering, and leave the new shoots to make canes for next year's bloom. Having done this years ago, we are quite surprised to find it announced as a new discovery. Indeed, the manner of growth, and the whole appearance of the bush at once suggests this as the proper treatment, if one would keep up a supply of new and vigorous wood. The work needs to be done at such an unusual time for pruning, that it is very easily overlooked.

The Labrador Tea.

There are several plants that are rarely to be found, save in the damp cold peat swamps, and dark moist woods of our Northern States. Comparatively few have seen this aspect of vegetation, where the sphagnum or peat-moss covers the surface for acres, the upper portion of the moss alive and growing, while the lower portion is decaying, and undergoing a gradual change into muck or peat. In this wet mass a number of plants find a congenial home, one of which is the Labrador Tea, *Ledum latifolium*, a shrub which sometimes reaches five, but is commonly not more than two feet high. It belongs to the Heath Family, with the Rhododendrons, Azaleas, American Laurels, and Andromedas. Its alternate evergreen leaves are oblong, on very short leaf-stalks, entire, and of a pale, dull green; as looked at from above they present no remarkable appearance, but the under surface shows a remarkable contrast; in the first place the edge is neatly turned over all around, *revolute*, as the botanists call it, though a lady might compare it to a hem, and the whole lower side is covered with a thick brownish or rust-colored coating of down or wool, reminding one of a piece of felt; we do not think of any other native plant that presents in its leaf such strong contrast of color and texture; the new growth of the stem has a similar down, which soon disappears. The flowers appear in May and June in umbel-like clusters at the ends of the branches, and proceed from large scaly buds, which are formed the previous season. The engraving shows the end of a flowering branch of the natural size. The corolla consists of five white petals, and the stamens, usually of the same number, are sometimes six or seven; the fruit is a dry oblong pod. The plant, though not so showy as some of its relatives, is an exceedingly neat and interesting one, and is much prized in England in collections of "American Plants," as the hardy plants of this family, and some others, are there called. When found in deep peat swamps, a plant that shows only a foot or two above the moss, will be found to have a stem five or six feet long beneath the surface, throwing off, at wide intervals, a few straggling root-fibers; such plants will not live, if transplanted, but it is not difficult to find those on the margins of the swamp, that are rooted in the soil; such, if cut back, are quite likely to succeed. All shrubs taken from their native localities should be severely cut back; this is especially important with evergreens. Like the Rhododendron and related plants, this would no doubt reach greater perfection in a specially prepared peat soil, but we have on two occasions removed the plant from its native locality to a very sandy garden soil, with very satisfactory results. In European nurseries the plants are raised from seeds and by layering. A much narrower leaved species, *L. palustre*, is found far north in British America. *Ledum*, is an ancient Greek name for some other plant, and attached to this by Linnæus; the name Labrador Tea refers to the use made of its leaves (which are slightly fragrant when bruised) by the people of Labrador as a substitute for tea.

LABRADOR TEA.—(*Ledum latifolium.*)

Standard Currants and Gooseberries.

Passing out of the rear entrance of Horticultural Hall at the Centennial, with a party of experienced horticulturists, on one of the hottest days of July, we came across a large clump or bed of currants and gooseberries in which the bushes presented a strange sight, the foliage and fruit being about on the level of the eye. Our friends were at first puzzled, but having heard of the plants through Dr. Chas. Siedhof, North Hoboken, N. J., we were on the lookout for them, and were glad to see that our zealous horticultural friend had not been too enthusiastic over this novelty in small fruit culture. A novelty indeed to see currants and gooseberries, that we are usually obliged to look down at, growing where the fruit could be examined without stooping, and where a good share of mankind could look up at it. The label indicated that this interesting exhibition was by "Kuhn & Co., Hoboken, N. J., Sole Agents." It was our pleasure to meet with Mr. Albert Kuhn, whom we found a wide awake young horticulturist, enthusiastic not only in this, but whatever else relates to horticulture, and who not only had no secrets about the matter, but very freely gave us the whole story with regard to the production of these trees, for they can hardly be regarded as bushes, with permission to publish whatever we chose.

Mr. K., in 1869, went to Germany to attend the widely known Pomological Institute of Dr. Edward Lucas, at Reutlingen, where, soon after his arrival, a lot of these standards were re-

STANDARD GOOSEBERRY.—(6 ft. high.)

ceived from Austria. Knowing the interest Dr. Siedhof took in such matters, Mr. K. immediately wrote him an account of these standard plants, which brought from the Doctor an order for a number of them. We mention this to show that they are no untried thing, but have been in cultivation in Dr. S.'s garden for seven years, and though he has increased his original six to 50, those first planted are in full perfection and vigor.

The stock used to graft upon is the Missouri Currant, *Ribes aureum*, well known in cultivation as an ornamental shrub with very fragrant yellow flowers. The stocks are usually propagated by what is known as stooling, or mound-layering, and are ready to be grafted when two years old; simple straight stems are used, or the stocks by proper pinching are made to produce several branches at the top, each of which may be grafted and form a large branching head sooner than when a simple graft is inserted. The stocks are taken up in autumn and potted, or wrapped in balls of moss, and kept in a cold frame until about the holidays, when they are brought into a cool house to be grafted. Here they are forced very gradually at a temperature of about 50°, and as soon as the stocks start well, the grafting is done; the grafts are inserted in the heavier stocks by ordinary cleft-grafting, but for others what is known as the American whip-graft—without cutting a tongue—is employed, the operation being finished by wrapping with waxed paper. All unripe, pithy stocks are rejected. The grafted stocks are kept rather dark until they start, are then given full light, and when the shoots are two or three inches long, they are placed in a cooler house, where they are gradually hardened off. When spring opens they are planted out, or those in pots plunged in a somewhat shaded place, and by fall the plants are fit for sale. The plants usually bear the year of setting out, the second year of the graft, and increase in size and productiveness from year to year. The pruning consists mainly in thinning out the weaker branches and keeping the heads well open to the light and air.

The advantages claimed for this treatment of the currant and gooseberry are: 1. Great fruitfulness, the plants bearing enormous crops. 2. Great size and excellence of the fruit. 3. Freedom from the borer; it is well known that when the currant is trained to a single stem upon its own roots, the labor is often lost by the destructive work of the borer; this insect has not been known to attack the Missouri Currant. 4. The ability to raise the fine large English varieties of the gooseberry without mildew; Dr. Siedhof states that in seven years he has not had a single fruit mildew upon his standards, while plants near by, cultivated in the ordinary way, were badly affected by it. 5. Cleanliness of the fruit, and the ease with which it may be gathered. 6. The highly ornamental character of the trees, a matter of no little importance to those who pride themselves upon a neat and well kept garden. The longevity of the plants seems to be well established, they having been, as already stated, imported by Dr. Siedhof seven years ago, and Mr. Kuhn informs us that the oldest he knows of, in Germany, are 14 years old, and as healthy and as productive as ever.

Messrs. Kuhn & Co., exhibited at a recent meeting of the Centennial Fruit Committee, gooseberries which measured 5¼ by 3¾ inches in circumference, and weighing an ounce and a quarter and an ounce and a half each.

We regard this treatment of the currant and gooseberry as one of the most interesting of recent horticultural developments, and are glad to find ourselves in this respect in accord with Mr. Chas. Downing, who says of the standards: "I have no hesitation in saying that they will become a valuable appendage to the garden of the amateur for ornament as well as for general use in the family, and are without doubt a novel and interesting addition to horticulture." Those who know the proverbial caution of Mr. Downing in all such matters, will see that this is for him enthusiastic praise. The engraving on page 341, is from one of the bushes at the Centennial, and has not so large a head as the older ones. We understand that the trees will be offered for sale this fall for the first time.

New Hardy Cherries.

BY D. B. WIER, LACON, ILL.

Many years ago, when I commenced the study of fruit culture in the North-West, I was surprised at the very meagre list of cherries that we could grow here. Only the Early Richmond (Kentish of Downing), Late Richmond (Late Kentish), English Morello, and common Black Morello, could be planted with any certainty that the trees would withstand the severity of the climate.

The Early Richmond, though nearly hardy and productive everywhere, is of too poor quality, being watery and thin of skin, it rots easily, and is too soft to ship; the three others are very poor in quality, and so late in ripening that the fruit is in a great measure destroyed by the plum curculio. There appeared to be no fruit more sought after by the people, and in the markets, than a *good* cherry. I therefore concluded if possible to give them cherries that could be depended upon in this climate in *all points*. This was setting the mark pretty high, but I am sure that I have succeeded, even beyond my most sanguine expectations. To obtain this result, I grew large quantities of seedlings from seeds of the Early Richmond, Late Richmond, English Morello, and the common Black Morello, and also a few from the hardier Duke and "Sweet" cherries. A very careful selection from these seedlings was planted for fruiting, or budded or grafted in the tops of bearing trees. I have now fruited something over 3,000 of these seedlings, and have many more yet to fruit. This, as we western folks so forcibly express it, "has been a big job." The task of carefully looking over, tasting, working, and recording an orchard of 3,000 trees in fruit is no small task in hot weather. I had resolved to give no variety any attention that was not superior in several points to the Early Richmond, it being the standard for comparison. Firstly, the tree must be as hardy as that, and secondly, it must be as hardy in *fruit bud*. All failing in these important points were discarded, for the North-West at least, at once. The grand total result, after having these new varieties in fruit from two to five years is, 36 varieties numbered and recorded for more or less propagation, and about one hundred other varieties recorded for future observation and trial. There can be no question of the complete hardiness of these varieties, they having withstood from six to ten of the most severe seasons ever known in Northern Illinois. As to the quality of the fruit, I have had that tested by as many competent persons as I could bring together, in competition with the best sweet cherries, and the record so made shows that with these seedlings we can grow cherries in the North-West nearly, if not quite, as good for *all* purposes as the *best*. I shall not at this time give descriptions of these new varieties, and will only add that I am more than satisfied with the result of my labors, though if I have life and health, I shall continue these experiments until I know as near as possible, how much the hardy sour cherries can be improved. I have obtained as yet no good results from seed of the English Morello, which is the hardiest of cherries except some of my seedlings. The Kentish family and the common Black Morello, appear to give the most seedlings of good quality.

I cannot close without remarking on what appears to me to be the most unjust and discriminating thing in our laws. What chance have I to get an adequate return for all my labor, time, skill, and capital expended in producing these new and *most valuable* fruits? Should I not have a *reasonable* proprietory right in them protected by law? Am I not more rightly entitled to a fortune from them than he who *accidentally* stumbled upon the adaptation of a little crooked piece of iron to the improvement of a sewing machine or other contrivance? The majority of improvements in mechanics are mere accidents, though, of course, with notable exceptions. While improvements in plants, fruits and animals are, as a rule, the result of the long application of time, money, and skill. I have made a few feeble attempts to have this state of affairs remedied in our horticultural societies, but was quickly frowned down and squelched by persons older and in authority, and who perhaps had never planted a seed for experiment. What a grand advancement in the world of horticulture would a proper law of this kind make. What skill and capital would be employed in this most pleasureable and valuable pursuit if each and every one knew for a certainty that if he produced something superior to what had been known before, his *money* reward would be sure.

[Our friend Wier, whose labors with the cherry we have known of for a long time, has his hobbies. One of these is, that good varieties of fruit of all kinds can be found that will endure the most severe of north-western winters, and has done much in this line—a most excellent hobby. Another is, that new fruits, flowers, and vegetables should be patentable. It does seem hard that the raiser of a new variety should receive but little benefit from his labors, and one is at first sight inclined to favor his view. But originators of fruits are few, and the people are many, and we do not think that the aggregate hardship of the fruit raisers begins to be equal to what would be the hardship of the people from annoyance, litigation, disputed ownership, and all that, should such a law as our friend asks for, be passed. We discussed this matter several years ago, and have not space in which to renew it, but as we let Mr. Wier "say his say," think it right to indicate our own position.—ED.]

Hen Manure in the Garden.

One of the best fertilizers within easy reach of the farmer and villager, is the contents of the hennery. This often goes to waste, and the hens find their own lodging in trees, and on sheds, and other outbuildings. But on most farms there is a roost under cover, where the droppings accumulate, and are kept in a dry state. As a rule, not much care is bestowed upon it. Often it lies upon the floor without absorbents, the ammonia constantly escaping, to the injury of the fowls. Sometimes it has an annual cleaning, but oftener it lies for years only wasting. Analysis shows it to be exceedingly rich in nitrogen, worth a cent a pound, or more, in the state in which we usually find it. If all its good properties were carefully gathered, and saved by the use of absorbents, it would be worth much more than this. There are two ways of doing this, equally effectual—daily sweeping and gathering into barrels or boxes, or by frequent deposits of absorbents under the perches. The former method involves a good deal of labor, and is resorted to only by those who insist upon the utmost neatness in the hen-house. The droppings deposited in the barrels are covered daily with plaster, dry peat, or some other good absorbent. Our own method is to apply the absorbents frequently under the roosts. The hennery has a cemented floor, and is built into a bank, fronting on the south, with a large supply of windows to give light and heat. Spring water is brought into the poultry-house by a pipe, and by the turning of a faucet a constant supply of fresh water is secured. The whole floor is covered with absorbents of various kinds, in which the fowls scratch and dust themselves as freely as they please. The staple absorbent in summer is dry garden soil or road dust, gathered as the state of the weather permits. In the winter it is sifted hard-coal ashes from the furnace. In addition to this, sea weed, and the wrack from the shore are frequently thrown in, which furnishes food for the fowls, as well as helps the manure heap. As soon as the smell of ammonia is detected, more earth is added, and thus the pile of manure grows gradually through the year. It is removed as often as manure is wanted in the garden, at planting, or to assist growing crops. It needs to be used with caution, either in the dry or liquid state. We have large faith in the economy of liquid manure, applied to fruits and vegetables in the summer. It is very good in dry weather, and not much less good in wet, if the soil is well drained. The quantity of water that plants will take up in the growing season is wonderful. We keep a large tank, which is supplied with manure and water from the hennery,

and frequently applied to cucumbers, squashes, melons, tomatoes, cabbage, and to grape-vines and other small fruits. The liquid manure adds much to the vigor of the plants, and the size and quality of the vegetables and fruits. To those who have never tried it, we think the free use of liquid manure will open a new revelation in gardening. Try it on the flower borders, and on all the growing crops.

CONNECTICUT.

The Cut-Leaved Sumach.

We know of no cut-leaved shrub or tree, that in departing from its normal condition, so effectually disguises itself as does the Cut-leaved Sumach. This is a form of the common Smooth Sumach, (*Rhus glabra*), as delicate and refined in its aspect as the other is coarse and common; indeed, we have rarely met with a person, even if very familiar with plants, who could identify this by the leaf. Fern-leaved Sumach would be a most appropriate name for it. Our object in noticing it at the present time is to call attention to its value in summer floral decorations, as in all large work of this kind, its leaves produce all the effect of fern fronds, and at the same time hold up much better than most of them do, retaining their form and freshness for several days; besides—an item of no little importance—they can be produced almost inexpensively. Indeed we are not sure but it would pay florists who do much decorative work to force the plant. As a lawn plant it should always be grown with a single stem, cutting it back each fall, to get a start as near the ground as practicable; if allowed to branch it loses much of its beauty; if grown for the sake of a supply of its leaves, it would even then be better to treat it in this way, as they are much more luxuriant when the whole vigor of the roots is thrown into a single stem. In early summer a leaf-folding caterpillar sometimes attacks the very tips of the leaves, which should be disposed of before the leaf is disfigured.

IRRIGATION IN THE GARDEN.—The experience of the past July will set the gardeners near the Atlantic coast to considering the subject of irrigation more seriously than ever before. There is rarely a season when the crops would not be benefitted by a copious watering, and in such a season as we have just passed, it is with many vegetables a question of watering or no crops at all. We have no doubt whatever that the strawberry crop would in ordinary seasons, by its increase, pay a handsome interest on the outlay for irrigating apparatus, and in unusually dry seasons, the saving of the fruit would remunerate all the expense by a single crop. By irrigating we do not refer to mere watering, as it is generally understood in gardening; but flooding the surface with water and allowing it to soak in to such extent that the soil will be thoroughly moistened. This requires an abundant store of water, but not so much as many suppose, as the garden may be so arranged as to be irrigated in detachments. The most favorable conditions are, where the water of a brook can be led along the higher part of a garden, and conducted to all parts. Unfortunately it is in only the rarest cases that this can be done, and most gardens must depend upon water obtained from other sources and stored until wanted. It is not our present purpose to discuss the details of irrigation, but simply to insist that it is practicable in nearly every garden, and that the means of effecting it will depend upon circumstances which will vary with the locality. Water rams and wind mills of various kinds are now made in great variety and at low cost, and water can be raised cheaply. Other sources not being at hand, a well will afford a supply. If the lay of the land allows of the building a cistern reservoir, this may often be best, but tanks of plank can be made to store enough to irrigate a moderate surface. It appears to us that there is no matter connected with gardening in which there is so much room for improvement as in this of irrigation, and the present, when the sad ruin wrought by the drouth is only too visible, is the time to consider "ways and means." During next April's rains no one will think of irrigating his garden.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Something about Cellars.

The Scriptures might teach us, if common sense did not, to count the cost before beginning to build a house. Some tell us to make out careful estimates of the cost of building materials, and all necessary labor, and then double the amount to get a sum nearer what will be the actual expense of the new house than the first careful estimate. A little observation, if positive experience be lacking, should teach any house-builder to leave a wide margin for extra expenses and for covering the losses which result from various accidents and delays.

It would seem as though no person of good judgment would rear a house without attending first to the foundation. But this mistake is often made, especially here in the West, or in new towns where there is scarcity of house-room if not scarcity of money. The house is hastily put up over a kind of hole in the ground, which is to be dug out deeper and wider, and made into a cellar sometime. But work presses, and time flies, and the frame of the house settles unevenly, and water collects in the hole meant for a cellar. Sometimes years pass before the hole is made into a cellar, and sometimes this desirable change is never made—all of which is a great mistake. Better build small, and be thorough as you go on with the work.

A good cellar is a very important part of a country house—a dry cellar, cool and clean in summer, frost-proof and well ventilated in winter. The author of "Homes and How to Make Them," insists that the cellar shall extend under the whole house if possible, and be not *less* than 7½ feet deep. If the house is built on firm dry land, with sufficient slope away from the walls in all directions, there will be little difficulty in securing a dry cellar. And what if the outside covered drain, which is intended to carry away the water from the cellar, slopes inward instead of outward? This would not often happen, but I have lived over one cellar where an attempt at drainage met such lack of success, impressing upon my own mind the need of great care in that respect. [One method of draining a cellar was described last month, on p. 296.—ED.]

There are many desirable places for a home where a dry cellar is an exception to the general rule. But a dry cellar you must have, or suffer more or less in family health. No matter if you are poor, "Doctor's bills" cost more than sanitary measures for the preservation of health. In a paper on "Drainage for Health," in the "Report of the Mass. State Board of Health," there is a very truthful representation of the condition of many farm-house cellars at the time of spring rains and melting snows. First, the flood in the cellar, when boxes, and barrels, and wash-tubs, and hoops, and staves are all afloat, and afterwards the horrible slime on the bottom, when the pond in the cellar has slowly oozed away, leaving behind all its poison filth. The most common method of cellar drainage—the construction of a small culvert running from a corner of the cellar to some low ground near the house, with little ditches across the cellar bottom connecting with this outlet is quite inadequate for securing a really dry cellar. No one need imagine that a well made water-tight inside with cement, will answer as well as drainage. Dr. French mentions an instance where a cellar was carefully and heavily cemented to exclude water, and the pressure of the water lifted the whole body of the cement from the bottom, leaving it in broken masses, like flag stones half on edge. He says it is practicable to exclude water from a cellar by a heavy wall laid in cement, and a heavy cemented floor of brick or stone, but the process is very expensive, and leaves the adjacent soil saturated with water in wet times.

In vain have you sought a healthy climate for your home if your new dry and frost-proof cellar lacks some adequate means of ventilation. People become gradually accustomed to increasing cellar odors in their living-rooms and bed-rooms, and breathe a tainted and unwholesome atmosphere quite unconsciously. An invalid, especially one with weak lungs, coming from a pure atmosphere into one of these cellar-tainted houses, quickly perceives the impurity of atmosphere which dwellers in the house had not observed. Perhaps this is the best mission of invalids, and no one need fear that they will ever find their occupation gone, for bad air and invalids will probably "go out" together.

In building, one or more of the chimneys should be so arranged that a flue may be used for ventilating the cellar. If windows alone be depended upon, they will probably be closed and sealed by the banking outside in the coldest weather. A cellar should have both an outside and an inside entrance. It is about equally uncomfortable for a housekeeper to have all the vegetables and meat brought in through the house for winter storage, or to be obliged to run out of doors in all weathers to reach her cellar by an outside door. The cellar should be made so tight and carefully protected in every part that rats and mice can find no entrance. Drains must be protected at the outer end by copper gauze, and the windows by wire-netting in summer, so that the whole cellar may serve as a clean cool "safe" for milk and other food.

A housekeeper who has a good cellar, has reason to be thankful for one great comfort, and she can but show her gratitude by taking the best possible care of it, letting nothing be left there to decay, and having it well cleaned as often as the case demands, which is at least every spring, very thoroughly, boxes, barrels, and all.

Dried Tomatoes.

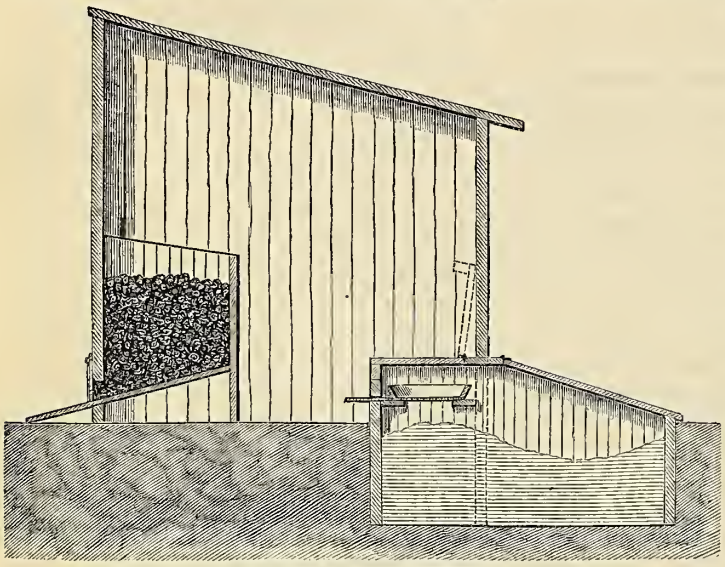
Housekeepers in the country, who have many tomatoes and few cans, can easily preserve a large quantity of this very easily raised fruit, by drying it. This method requires little outlay, and comparatively little trouble. Scald and peel the tomatoes, as for canning. Boil them slowly in a porcelain kettle or stone jar, until the original quantity is reduced one-half. Then season them in the proportion of a teaspoonful of salt, and half-a-cupful of sugar to a gallon of stewed tomatoes. Spread on plates and dry quickly, *without scorching*. As the moisture dries away and the stewed fruit takes shape, scrape it up so that both sides may dry, and let the contents of several plates, heaped up lightly, stand in bright sunshine a little while before putting away. Store in bags and keep dry.

When wanted for use, put a small quantity soaking in considerable water several hours, or over night. Stew in the same water long and slowly—three or four hours—keeping boiling water at hand to add if it grows thick, and so is in danger of burning. It should be quite thin when done, and may be thickened with bread crumbs, and seasoned with a little sugar, salt, and butter—of course tomatoes should not be made sweet. [As to sugar in tomatoes, tastes differ greatly; we know a few persons who habitually use sugar upon the cooked fruit; for ourself, the least particle of sugar is at once detected, and the dish is spoiled. We should as soon think of putting salt upon strawberries as sugar upon tomatoes. ED.]

Knitting Work.

Practice enables a person to knit with such ease and lack of attention, that the work is almost like play, or like doing nothing. I say "person," because I do not see why boys and men should not become skilled in the art of knitting. If a man has done a good day's work and feels tired as he sits down at evening, or if he is inclined to read by the evening lamp, he had better let knitting work alone. The rest or the reading will do more good than his knitting work. Why is not this true also of women? Many a weary woman feels that it would be quite scandalous for her to sit down at home, even for an hour before bed-time, without some work in her hands; and if she is too tired to

sew, she must knit. She may possibly read a little in the newspaper in the evening, but she would be ashamed to be caught with a book in her hand except on Sunday—as if she had no work to do! A woman who is pressed with necessary work, who is really tired when evening comes, ought to let knitting work alone and buy the stockings for her family. But home-knit socks are usually the most satisfactory as regards warmth and durability, and besides, knitting is a very pleasant occupation.



COAL-SHED WITH ASH-BIN.

Babies interfere with it. They pull out the needles, and would like no better fun than to ravel the work. They oblige one to lay aside the knitting so often that it grows slowly when they are about. Besides, babies themselves are knitting work enough for a mother while babyhood lasts.

I suppose that most of the knitting is done during the long winter evenings, but if a woman who has much other work to do, accomplishes much knitting, she has to do here a little and there a little, through all parts of the year. Knitting work of coarse warm yarn, suitable for men and boys upon the farm, seems too warm for summer work, but the finer stockings and soft baby socks can be knit then. No yarn is fit to knit that smells and feels greasy. It may be good yarn, and its disagreeable qualities can be overcome by soap and water. Tie the skein in several places to prevent tangling, and wash it in a strong suds, rinsing it well in warm water.

One who has become an adept at plain knitting, can accomplish considerable reading while the fingers are busy, but only light reading can be done in this way. It is folly to try to knit or to do anything else when reading anything that deserves close attention and serious thought. One can be very much interested, emotionally, and keep the hands as busy as ever, but when the mind begins to study earnestly, the work will drop. For this reason it is not the proper thing for ladies to take their knitting work or tatting or other light work when going to hear a lecture, as is sometimes the custom, especially to afternoon meetings on week days. It suggests the idea that they do not consider the speaker's thoughts of sufficient importance to claim their whole attention, that they fear their time would be wasted if some work of the hands were not accomplished while the mind is fed. By trying to accomplish something else while also attempting to listen to a good lecture, the time is worse than wasted.

But when one feels obliged to knit or sew upon something that is so plain as to require no effort of the mind, it is a pleasure to have something not very obstruse, some good story or simple narrative or easy discourse read aloud. If the mind is in a vigorous or unwearied condition, it seems clear gain to skim a newspaper or read a good short story, or the last chapter of a serial, while a stocking for some dear one grows apace.

To Correspondents.

Many sweet, good, earnest women write to me, and I love to get their letters, and wish to answer them, but I wait in vain for a convenient season. Perhaps it will come to me yet, but too late to meet the necessities of some who write. Most of those who have written to me about undergarments for women and children, will find their questions already answered in previous Home Topics. I learn, however, that patterns of the Emancipation suit are no longer for sale, as it is now a patented garment. It is sold ready made in the large cities. Those who sell them ought to advertise in the *American Agriculturist*, but it is hardly proper for me to give them a free advertisement here. This suit is made with laced sides, (to accommodate persons who cannot be quite fitted by ready made garments), or without laced sides.

A mother inquires what part of the new suit is worn as night dress. All of the garments worn during the day, should be exchanged at night for fresh clothing, one garment or more, according to the weather or choice. If flannel is worn during the day, it ought to be used at night also.

In describing a little girl's costume, I quite forgot to mention a chemise, because perhaps it is so long since I have seen one. I never put them on my little girls, but used instead, the united, (or buttoned together), waist and drawers, as my elder sisters did before me. A flannel under-suit, opening behind, with a drilling or gingham waist, to which outer drawers and skirt are attached, a lined flannel dress, and a sleeved apron, all opening behind, can be taken off all together, hung so as to let the air reach the inner flannel all night, and put on to a child with "one motion" in the morning. Flannel night drawers, (or night gowns with legs), naturally take their place during the night.

Preserving Small Quantities of Ice.

Ice-houses are now so common that those who have them, and well filled, can hardly appreciate the condition of those to whom ice is a rarity. While it seems to be a matter of necessity in modern house-keeping, there are still many families which manage to get along without it. In sickness, ice is often one of the most important remedies, and it must often be sent for from a long distance, and in such cases it is a matter of importance that none should be needlessly melted. To keep ice, it must be covered with some non-conducting material that will prevent heat from reaching it. Wrapping the lump in flannel or other woolen cloth, answers a good purpose until the covering becomes wet, when the ice melts very rapidly. The more perfect a non-conductor the material that surrounds

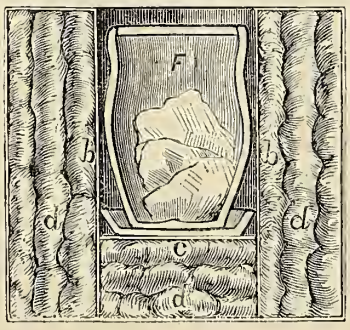


Fig. 1.—SECTION OF PRESERVER.

the ice, and more completely warm air is excluded, the better it will keep. Ice has been kept an astonishing length of time by placing it between two feather pillows, a plan that may do in an emergency, but neither convenient or desirable. We give here illustrations of a preserver contrived by a lady of our acquaintance, which can be readily made, and which does good service. Figure 1 shows the affair in sections; it consists of an outer

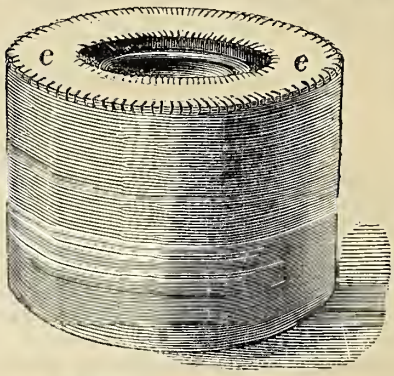


Fig. 2.—PRESERVER FOR ICE.

box of pasteboard 18 inches in diameter, and the same in hight; within this stands a cylinder of pasteboard, *b*, *b*, 10 inches in diameter; the space between the two is filled with cotton batting, *d*, *d*; the batting is also placed in the bottom of the cylinder to the depth of three inches, and a pasteboard cover, *c*, crowded tightly down upon it. The ice is placed in a stone jar, *f*, which stands in a saucer

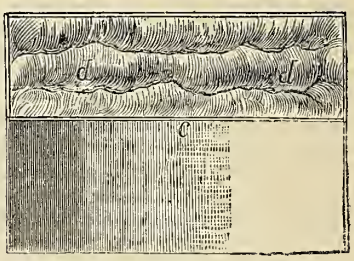


Fig. 3.—SECTION OF COVER.

to catch the drip. A circular rim of pasteboard, *c*, *c*, figure 2, which shows the exterior of the affair, is sewed to the outer box and inner cylinder. The cover, which is made on the same principle, is shown in section in figure 3; it is of pasteboard, like the box, and has three inches of its upper part filled with batting, which is held in place by a circle of pasteboard, *c*. When the cover is placed upon the box, the ice is surrounded on all sides by about three inches in thickness of cotton-batting, which is such a complete non-conductor that ice may be preserved in this manner for 24 to 36 hours. A strong darning-needle with a cork for a handle, makes a convenient pick for breaking off small pieces of ice as they are required. The same contrivance will be found useful for keeping drinks and other matters warm; these if set in the cylinder in place of the ice-jar, will retain their heat without much loss for several hours.

A Safe Ash Bin.

In disposing of ashes, both safety and cleanliness are to be considered. When coal is used, proper economy requires that the ashes should be sifted, the unburned pieces of coal picked out and saved. An arrangement for the cleanly and safe disposal of ashes, is shown in the engraving, which represents a section of a shed with a coal bin having an outside outlet, as has been previously described in the *American Agriculturist*, (March No.), and an ash-bin at the rear, with an opening into the bin at the outside, for the occasional removal of the ashes, and the deposit of other waste that may be mixed with them. In the shed there is a lid which, by the dotted lines, is shown as lifted. Beneath the lid is the sifter, which is made to slide back and forth upon cleats, for the purpose of shaking out the ashes, and which may be lifted out by the handle in front, when the cinders and coal are to be emptied into the coal-bin in front of it. The ash-pit or bin is sunk in the ground, and should be

lined with brick, stone, or cement, so as to be fire-proof. The sill of the shed crosses it on a level with the ground, and as the ashes are never permitted to reach this sill, there can be no danger that fire may be communicated to it by live coals which are sometimes thrown out amongst the ashes. The larger part or the bin is outside of the shed, and it would be well when making it to have it large enough to hold at least a wagon load. When this quantity has accumulated, it should be removed. Where earth closets are used, fine *coal* ashes are an excellent substitute for dry earth, and they may then go from the earth closet to the compost heap. The ashes make useful material for walks and roads about the farm or garden, and when employed for this purpose, it is desirable to have a large quantity at once.

Household Notes and Queries.

Varnishing Lithographs.—"Sadie," Bent Co., Colorado. If a lithograph or any other paper be varnished without previous preparation, the varnish will sink into the paper, rendering it partly transparent, and giving it a very spotted and unsightly appearance. Before varnishing, the pores of the paper must be filled with some material which will not allow the varnish to penetrate, and this operation is called "sizing," and the material used a "size." For engravings, some form of glue makes the best size; the whitest glue or gelatine, will answer quite as well as the more expensive isinglass sometimes recommended. An ounce to an ounce-and-a-half of gelatine or white glue to a pint of water, will make a size sufficiently strong. Soak the glue in cold water until soft, then heat and add the rest of the water. Try one coat on a piece of paper similar to that of the engraving; when thoroughly dry, apply the varnish; if that sinks in, it shows another coat of size to be needed.

Rye Bread.—Several responses have been received to our request for instructions to make Rye Bread. The following comes from "W. A. R.," Allegheny, Pa., who says: "The *American Agriculturist* has been useful to me, and I would like to make some return if it is in my power." "For Rye Bread I set the sponge with wheat flour, the same as for wheat bread. After the sponge has raised well, I mix the dough with rye flour, working it well; after the dough has raised well, I mold it into loaves, and raise again. Bake on an oven bottom, and when almost done, take the loaves out of the oven and wash them on top with a little brown sugar and water, and then set them back to finish baking. Those who like caraway seeds in rye bread, can put them in while mixing the dough." ....Mrs. "M. H. K.," says: "As our family are very fond of rye bread, we have used it almost entirely this winter, and think our receipe a good one. It is: Take two quarts warm water, and melt in this one table-spoonful of lard, then add the same quantity of sugar and salt, stir in rye flour, making a thin batter; then add a cup of yeast, and let it stand over night to raise. In the morning stir in more flour, making a thick batter, and when it again becomes light, put into pans and bake, either with or without raising a third time."

Staining or Painting a Floor.—"Mrs. E. B. N.," whose request, being appended to some recipes, was overlooked until now, wishes to know how to stain a common pine floor to look like black walnut. The staining in imitation of walnut is done with burnt umber mixed with water. It is prepared by color makers for the use of those who grain in imitation of walnut, and this would, perhaps, be too expensive to use upon a floor, and the ordinary dry burnt umber would probably answer. The color mixed to a thin mud, should be applied to the floor, and well rubbed in with a woolen cloth. Some boards will take up more than others, and thus make a pleasing variety. The staining depends upon the sinking of the fine particles of the paint into the pores of the wood, and none should remain upon the surface, as in painting, but as much as possible should be rubbed into the pores of the wood. When the water dries away, the color will look very dull and unpromising, but will be brought out by varnishing, or waxing the floor. In

Painting Floors, we have had no experience. Those we have seen have been covered with a paint of yellow ochre. Any painter will tell you which will be the best paint for the purpose. If any of our readers can give any advice as to a useful method of treating kitchen floors, either by staining or by painting, we shall be glad to hear from them.

BOYS & GIRLS' COLUMNS.

The Childrens' Play-House.

We many years ago visited a place celebrated all over the country for its great beauty. A grand house was surrounded by equally grand grounds; there were broad and carpet-like lawns, smoothly rolled walks; there were tall old trees and rare flowers; there were statues and vases brought from Europe; there were covered seats, a fountain, a water-fall, and a bridge, and it seemed as if everything that money could buy, had been brought together to make the place beautiful. We spent many hours in these charming grounds, and now, after these many years, when we think of our visit there, what do you suppose first comes to mind as the prettiest thing on the whole place?—Not statue, vase, or fountain, but a little hut built of poles and bark, hidden among the tall shrubs in a quiet nook—a play-house for the children! Here was good sense. The owner was wealthy enough to have had it made of marble, or it might have been of nice wood work, with carving and painting, but he had not forgotten that he was once a child, and that children when they have a good time, do not wish to be in fear of scratching the paint or disfiguring the marble, so a neat bark house was built for them, and right cosy it looked. The sketch by our artist of a rude play-house reminded us of that, and reminded us to say to the larger boys that they can not better please their younger brothers and sisters, than by putting them up a play-house. Children like some place which they can call theirs, where they can have their playthings, and where they can invite their young friends. It need not be very nice, but it should be a shelter from the sun, and all the better if the roof can be tight enough to keep out the rain, so that it can be used in stormy as well as in bright days. A tent will answer pretty well, but it is not so good as a house built of boards. Those who live where trees are plenty, can easily make a neat rustic house. The roof is the principal thing, for the sides need to be pretty much all doors and windows, to give plenty of air. Pine leaves make a capital carpet, or you can cut rushes to lay down on the floor. In choosing a place, see that it is one from which the water will run away when it rains, else it will be very unpleasant. A very pretty house may be made by putting up a roof—only let it be a good broad one—supported by posts, and then plant vines all around to serve for the sides. Morning glories, beans—especially scarlet runners—Cypress vine, and others, can be trained upon strings to make a nice shady arbor. Then boxes, kegs, and other articles can soon be turned into furniture that you need not be afraid of scratching. Youngsters do not need to be told what to do with such a house. The school keeping, the tea-parties, the going a visiting, will all come of themselves. Then it can be the childrens' museum, where all the curious and pretty things that you find can be collected. Here the curious stones that are found about the place, the shells from the brook, the pine cones, the wax-work berries, will all be brought, and here will come the gay bunches of autumn leaves. Don't forget to make friends of the birds and the squirrels, as they may be taught to come about the house and be very tame. It is not the most expensive things that bring the most enjoyment, and a boy can make his young brothers and sisters happier by providing them with a simple play-house, than in any other way we can think of. It is perhaps rather late in the season, but a house built in these fine autumn days will be all ready for another year.

THE CHILDREN'S PLAY-HOUSE.

The Doctor's Correspondence.

I can save a number of young people some trouble, or what is the same thing, tell them how they can save it themselves. Do not ask me to "answer in the next number."—Here is a letter that asks for a reply in the August number, and when it came the August number was not only printed, but I have no doubt that a copy of it was in the mail-bag and on its way to that boy's father. I have not received a question yet from a boy or girl so important that a delay in the answer should affect their health or happiness. Don't be impatient, young-

sters, you may be sure of attention just as soon as it is convenient.

CRYSTALS IN THE JELLY.

Master L. A. W. A., of Seneca Co., N. Y., sends a little box containing some very pretty crystals from peach jelly, and says: He wishes to know about the crystalization, "and to what acids it is due."—I cannot see how my young friend got the notion that "acids" had anything to do with it, as the crystals are only pure sugar, colored a little with the coloring matter of the peach; and as sugar dissolved in pure water will in time form such crystals, it is not worth while to be looking for any unusual cause. Cold water dissolves about twice its weight of sugar, while hot water dissolves so large a quantity that it is not exactly known how much. When hot and strong solutions of sugar cool they deposit the sugar in crystals; if the solution is very strong the crystals will form rapidly, will be very small, and in a mass, as we see in loaf sugar. If the solution is weaker, the crystals will form more slowly, be larger, distinct in shape, and very clear. Rock candy is made in this way; a syrup or solution of sugar of the proper strength is set in a warm place for some weeks, and the sugar will slowly crystalize upon threads hung in it for the purpose; the crystals thus slowly formed look much unlike loaf sugar, but they are the same except in shape. Snow, which is quickly formed, and very small ice crystals is dead white like loaf sugar; ice, which forms slowly, is transparent, like rock candy. If you crush a crystal of rock candy or a bit of ice, you will in both have a dead white powder. So you see that the same thing can put on very different appearances. It is difficult to say what caused the crystals to form in my young friend's jelly. Sometimes boy's mothers are bothered by very small crystals coming through it, like candied honey. It may have been kept in too cold or too warm a place, or there may have been too much sugar. All I can say about it is, that crystals are the natural form of sugar, and it will, sooner or later, get back into crystals unless there be so much liquid as to prevent it. Their regularity and size shows that these crystals have been a long while in forming. I am glad my young friend sent them, for the reason that they are six-sided crystals. Sugar usually is in four-sided crystals, and though I knew that they were sometimes six-sided, and had seen figures of them, I do not think I ever before saw the crystals themselves.... Some of the boys ask

RATHER TOUGH QUESTIONS.

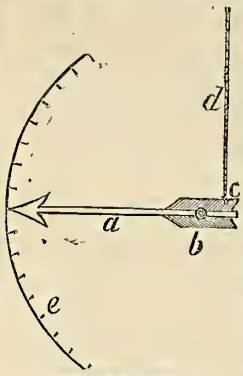
Here is one who knows from experience that willows will grow readily from cuttings, while apples will not, and he wishes to know why it is. This is a matter which my young friend knows as much about as any one; he has tried the two plants, and finds that it is so, and the most learned cannot get much beyond that. As a general thing trees with soft wood take root more readily than those with hard, but no one can know with certainty whether a plant will root readily from cuttings or not unless it is tried. Some apples will grow from cuttings almost as readily as a willow, but they are not of kinds valued for their fruit. There are some shrubs that is almost impossible to raise from cuttings, while their close relatives grow readily.... Here is a letter from H. L. P., who says that it is his first letter, "so please do not throw it into the waste basket."—I am not in the habit of treating my young friends' letters in that manner; all who write as sensible letters as he does are quite welcome, and if they do not get a direct answer, it is for some good reason. He wishes to know if white is not one of the

SEVEN PRIMARY COLORS.

White is not regarded as a color at all. I have been intending to make a "Talk" some day about light and colors; it is a difficult subject, but there are some things about it very interesting, and which young people can understand. At present I will only say that light, as it comes from the sun, is white light, and without color, but that it may be separated into seven different colors, viz: red, orange, yellow, green, blue, indigo, and violet; these are called the primary colors, and all other colors, tints, and shades, are mixtures of these. There is a way, which I hope to describe some time, of breaking up white light into these colors, and then bringing the colors together again to make white. Some regard the primary colors as only three: red, yellow, and blue, and orange as a mixture of red and yellow, green as yellow and blue, etc. Black is the absence of all color, and all light. I can now only answer the question about primary colors, but at another time hope to say more about it, and tell you of some curious experiments that you can easily try with colors.... Martin L. H. wishes to know how those little affairs like a house with two doors, from one of which a man comes when it is stormy, and from the other of which a woman appears when it is fair are

AFFECTED BY THE WEATHER.

You have noticed that a cord is slack in dry, and "taught," as the sailors say, in damp weather. A clothes line is a very common example of this. These toys are so arranged that the shrinking of a bit of cord moves the arm to which the figures of the man and woman are fastened. You can easily make something of the kind. A simple way is to make a pointer like a clock hand, or an arrow.



HYGROMETER.

You can cut one from a piece of shingle, *a*, and put a strong pin, *b*, through near one end for a pivot; at *c* tie a piece of twine, *d*, that has been soaked in salt and water and dried; this may be 6 or 8 feet long, and fastened to a tack on the wall above, which it is not necessary to show in the diagram; you can then, to better observe the changes, mark a scale, *e*, upon a piece of paper, and put it behind the point. One arm of the arrow being so much longer than the other, the motion will be very much magnified. This simply shows that the air is moist, and as it frequently becomes so before a storm, it may sometimes show that a storm is coming, but it is not to be depended upon. Such instruments are called *Hygrometers*, from the Greek words for moisture and measure. Barometers have reference to the weight of the air, and act upon an entirely different principle. The human hair is very sensitive to moisture, and a very delicate hygrometer may be made with a long hair that has been washed in a solution of soda to remove the grease.

A Dog Dying of Grief.

The "*Forest and Stream*" some months ago gave the following story of a dog's love for its master:—About two weeks ago a man named Parcels, a blacksmith, residing near Dobbs' Ferry, went hunting "coons" at midnight. His companions consisted of a neighbor, residing close by, and a faithful dog. While searching for game at Sneeden's Landing, on the Hudson River, Parcels approached the brink of the Palisades, and by some mishap lost his balance and fell down a distance of 30 feet. His friend having missed him, sought him, and by diligent search found him lying where he had fallen, and his faithful dog by his side moaning piteously. On attempting to approach the body the usually friendly animal strongly protested by growls and threatening attitudes. The man, seeing that his companion was seriously injured, went for aid, and in a short time returned with a surgeon and some friends; but the dog, which lay with its head across the body, refused to let them touch the treasure it so faithfully guarded. They were at length compelled to drive him away from his post by blows. An examination proved that the man was dead, so the remains were placed in a boat and a piece of canvas thrown over them. The dog jumped into the boat also, and placed his head across his master's face, and remained there until the landing. The body was then placed in a wagon and conveyed home; but no sooner had it been covered than the loving friend again sought his old post. After the burial the dog became more depressed, refused its food, and wandered listlessly about, moaning in a low, nervous tone, and heedless of everything. He would pay no attention to any of the inmates of the house, and all their efforts could not cause him to manifest any signs of recognition. After dragging along for a week, earing neither for food or water, the faithful dog died—a martyr to love for his master.

Aunt Sue's Puzzle-Box.

CROSS WORD.

My first is in bracelet but not in ring,
My next is in chant but not in sing,
My third is in year but not in day,
My fourth is in corn but not in hay,
My fifth is in ale but not in beer,
My sixth is in there but not in here,
My seventh is in pink but not in red,
My eighth is in Tom but not in Ned,
My ninth is in rain but not in shower,
And my whole is the name of a beautiful flower.
JIMMY JOHN.

NUMERICAL ENIGMA.

I am composed of 21 letters:
My 10, 11, 1, 6, 3, is a very pretty name for a girl.
My 4, 12, 13, 3, is a grain.
My 20, 15, 17, 10, is a kind of bullet.
My 9, 5, 2, is to point.
My 16, 14, 18, 8, is to swerve.
My 20, 21, 4, 7, 19, 16, is distress.
My whole is always a welcome visitor. P. A. W.

ANAGRAMS.

1. Onion camp.
2. Mrs. Moon.
3. Head car.
4. Anna, toil.
6. Bar so salt.
6. Hope's pride. E. W.

DOUBLE ACROSTIC.

The initials and finals give the names of Spartan lawgivers.—1. A French novelist. 2. A lively musical variation. 3. A man mentioned in the Bible. 4. A bay on the Atlantic coast. 5. A river of New England.
LITTLE ONE.

CHARADE.

My first word names an English town,
In olden times, of great renown;
My second hath a changeful voice,
It bids us weep, anon rejoice;
My whole in Flora's fair demesne
In summer time may oft be seen. THYRZA.

CONCEALED STATES, COUNTRIES, ETC.

1. I will tell you our plan. Eva, Dan and Mary go to Philadelphia, and I go home. 2. John, will you escort Ida home? She is quite ready. 3. We are going to church in a chaise. 4. Mother, can Ada take this pear to sister? 5. Oh! what a beautiful sample of ore! Go, Ned, and show it to your father. 6. Nellie, is Pa in the garden? 7. No, he was just starting for his office as I arrived. L. J. S.

CONCEALED SQUARE WORD.

My dear William, art is a real blessing if properly directed; and here am I waiting for a chance to learn something. Just now I think myself well off if I get an ounce of meat at a meal. CLIO.

PI.

How ni a suhoc fo slags dulwo welld
Thiw sourcni cesy ta verey nape?
Ot grin imh ni dan tou anagi,
How stawn het cublip ricer's lelb?

GIBBERISH.

Do I ngu O thin gis Do I ngi LL.

METAGRAM.

Find a word of five letters out of which you can get 15 nouns (inclusive).

HOUR-GLASS PUZZLE.

The center letters name a city in Florida.—1. Eloquence. 2. To underrate. 3. A county in Kansas. 4. A county in Texas. 5. To forbid. 6. One seventh of one half. 7. To prate. 8. A county in New York. 9. The capital of one of the United States. 10. One of the United States. 11. A river in the United States.
BILLY BUTTON.

DECAPITATIONS.

1. Behead something dismal and leave a mechanical contrivance. 2. Behead what you don't like to have and leave what you should like to be. 3. Behead one who represents another and leave one who represents another. 4. Behead something often comforting, though often very dangerous, and leave something that it is unpleasant to be. 5. Behead an error and leave where it may often be found.

DROP LETTER PUZZLE.

H w o h h l t l b s b e
E p o c a l r h n n h n
A d a h r o c a l h d y
F o e e y p n n f o e

ANSWERS TO PUZZLES IN THE JULY NUMBER.

CHARADE.—Figure (fig-Ure)

DOUBLE ACROSTIC.

Chameleon. Alligator.

C— alecolari —A
H— umera —L
A— w —L
M— ag —I
E— g —G
L— ouisian —A
E— mme —T
O— ntari —O
N—ceromance—R

ANAGRAMS. — 1. Thunderbolt. 2. Encroachments. 3. Workmanship. 4. Europeans. 5. Bricklayers. 6. Intelligence. 7. Warehouses. 8. Countermanded. 9. Rehearsal. 10. Interchanges.

TRANSPOSITIONS. — 1. Seldom, models. 2. Stop, post. 3. Satin, stain. 4. But, tub. 4. Nuts, stun.

SQUARE WORD.

Y O U R S
O R L O P
U L E M A
R O M A N
S P A N S

DIAMOND PUZZLE.

Rio Grande.

R
K I T
M O O N S
S T A G G E R
R I O G R A N D E
T A R A N T O
B O N D S
O D E
E

DECAPITATIONS.—1. Estate, State. 2. Falter, alter. 3. Flight, light. 4. Gold, old. 5. Gown, own. 6. Leas', east.

CROSS WORD.—Mark Twain.

PI.—In Wesminster's royal halls,
Robed in their pontificals,
England's ancient prelates stood
For the people's right and good.

Thanks, for letters, puzzles, etc., to Susanna H. W., Effie W., Harry, G. W. B., Soulon, Charlie G. B., G. G. G., Mary A. E., Gertie, H. S., F. M. G., and G. Barnes.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

What Katy Did.

BY LILA V. NORTH.

It was past three o'clock when Katy went through the east orchard. The shadows of the trees lay on the short grass, with patches of sunlight between, and at every step Katy took, the grasshoppers, big and little, jumped nimbly out of the way. Katy was a very pretty little girl, her brown eyes and brown curls matched her brown gingham dress, and her lips and cheeks were like the scarlet of the cardinal-flower down in the swamp. The orchard was full of apples—red, yellow, and green—but Katy did not stop, not even under her favorite Seek-no-further tree; she went right on, holding something in her little apron, past the orchard, and the rye field on the other side, pausing only to break off a tall golden-rod,

which stood looking over the wall, until she reached the woods. She went in under the cool shade of the trees by a little path, which went down into hollows and up on rocks, and around trees and through ferns, until it reached a brook. Katy sat down on a stone by the bank, and looked into the water. Away back in the woods she could hear it tumbling, and gurgling, and laughing at the stones which tried to keep it from going on its way, but here it was very still. Close by Katy's seat was a little pool, with a sandy bottom, and below it a shallow fall, where the water made a low sound—like some one singing to a baby. Overhead the trees waved their long branches, and the wind in the leaves made soft music, as though it were answering the brook.

Any one would think that such beautiful sights and sounds could not but make a child very good and very happy, but Katy, pretty Katy, was very far from being good just now. She was watching the curious long-legged water-beetles skimming and jerking on the surface of the pool, and waiting until one came quite near, she caught it suddenly and put it in her apron. And now let us see what Katy has been hiding there this long time. First, there was a red and black butterfly, which has torn the edges of its pretty wings in trying to get out of its prison; then there is a great yellow moth and a tiny lady-bird, a big brown grasshopper, and the water-beetle.

Katy took out the butterfly, and as she was doing so, the lady-bird flew away home, but the butterfly was not so quick, he only crawled around and around Katy's hand with his soft legs, as though asking her to help him. But all that Katy did was to pull off two of his pretty wings, to see if he could fly with the other two. Now, if a butterfly could get along with two wings, God would not have given it four, so Katy had quite ruined the poor creature, and after trying in vain to make it fly, she grew tired of it and threw it down in the grass—not having the kindness even to kill it, and so end its misery.

Then Katy took up the moth and laid it down flat on the top of the water. Poor moth! it's wings grew wet and heavy, so that it could not raise them, and though it did not sink, it was forced to float with the stream. Katy laughed to see it carried over the fall, and away down the brook, until she could see it no more. The water-beetle was the next victim; Katy wanted to see if he could live under water, so she pulled a thread out of her apron, and fastened one of his legs to the golden-rod. Then she held him under the water a long while, and when at last she drew him out, his long legs were all drawn up—he did not move, the poor insect, though it lives in the water, must breathe air, and was now drowned and dead.

Now the grasshopper had been shut up in the dark a long time, and feeling rather lonely, he resolved to fiddle. So fiddle he did, and a very merry tune it was, though he could not help wishing for his brothers and cousins to dance to his music. Katy heard him, and peeped into her apron to see. There he was, using one of his wings for a fiddle and the other for a bow.

"How funny!" said Katy, as she took out the grasshopper, and holding it by one of its long legs, to prevent its jumping off, waited for it to fiddle again. But the grasshopper was not used to being watched so closely while he was playing, even if he could have done anything with some one holding him like that. So, after waiting a long while, and hearing nothing, Katy pulled off both the fiddle and the bow, and threw the fiddler away. Then she arose, went back by the little path to the edge of the wood, across the rye field, through the orchard, with the shadows about her feet, and the sunlight on her hair, and so home.

There was a pretty green insect setting in a chestnut tree which grew by the brook. The green insect saw all which Katy had done. While she was there, it was afraid to speak, but after she was gone, in the evening, when all was still, he told it all to his cousin, who lived in a maple tree on the border of the wood. This second green insect had seen Katy coming out of the woods, tripping along, with the sunshine on her brown curls, and the golden-rod in her hand. He could not believe such a lovely little girl could be so cruel.

"It can't be," he said, "I don't believe it."

"But I tell you it's so," said the first green insect, "I saw it with my own eyes!"

"It must have been some one else," said his cousin, "Katy couldn't."

"But Katy *did!*" chirped the first, "Katy didn't!" cried the second.

"Katy did!" said one; "Katy didn't," said the other, and so they kept it up all night, and not only that night, but all the nights until frost came. Soon all the green insects in the woods and fields around held one of two opinions, either that Katy did, or that she didn't. And so it has been from that time.

Listen almost any night after the first of August, and you will hear them, hundreds of these green insects, repeating Katy's name, and wherever there is found one who thinks Katy did, there is found another who is sure she didn't. But you and I know that Katy *did*.

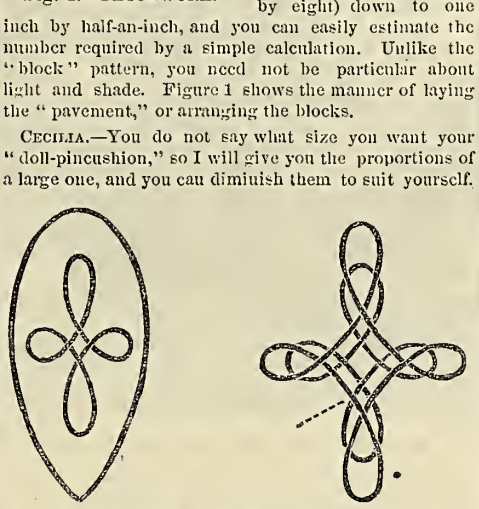
Aunt Sue's Chats.

James H. Foster says: "Can you tell me why the 1st of April is called April fool's day?"—That is a very "vexed question," James; antiquarians have searched in vain for the origin; one writer thinks that we get it from the French, whose *poisson d'Avril* (April fish) is said to refer to the mackerel, a silly fish, which is caught with so simple a bait as a piece of red flannel. The Hindoos have their "April fool's" day, which they call their *Huli* feast. The Romans had their *Festum Fatuorum*, or Fool's Holiday, which classic writers claim to be identical in date with our All Fool's Day; and it is said that *they* got it from the East. By some it has been traced to the passage in our Saviour's life, when he was sent back and forth from Pilate to Herod, and from Herod to Pilate. But the most remote, approximately definite origin, of which I find any account, is one which ascribes it to the mistake of Noah, in sending the dove out of the ark before the waters had abated, and that, as the legend has it, on the first day of the month, which among the Hebrews answers to our April. If any of our readers can give us a more probable origin, we should be glad to hear from them on the subject. Your other questions should have been propounded to 245 Broadway, as they are on business.

A. N. J. has "heard of one kind of patchwork, called 'Philadelphia pavement,'" and asks if I have ever heard of it, and can I give her the pattern, and tell her how many blocks it takes for a large-sized quilt.—There may be more than one pattern of that name, but the only one I know of is made to represent the brick-work of a side-walk. You can make your blocks, or patches, any size, from that of the original brick (four inches by eight) down to one inch by half-an-inch, and you can easily estimate the number required by a simple calculation. Unlike the "block" pattern, you need not be particular about light and shade. Figure 1 shows the manner of laying the "pavement," or arranging the blocks.

Fig. 1.—PATCHWORK.

Cecilia.—You do not say what size you want your "doll-pincushion," so I will give you the proportions of a large one, and you can diminish them to suit yourself.



Figs. 2 and 3.—SECTION AND BRAID.

You will need six pieces of the shape of figure 2, six inches long and three wide, (in the longest and widest places). Common red and white flannel, alternated, and braided with black braid, make quite a pretty cushion. If the "braiding pattern" on figure 2 is too simple, you can try figure 3, and if you begin it where the dotted lines point, you can keep the braid continuous. The center-section may be worked with the initial desired. You can cover the seams, where the sections are joined, with fancy braid or gimp. When the pincushion is well stuffed, (it should have unbleached muslin under the flannel, cut the same as the flannel, and sewed first,) sew the doll's head firmly on to it, then drape the waist, as in figure 4, (the red and white flannel together,) sew it in place at the back, and keep it in place in the front, by sticking a large pin through the center-folds into the cushion.

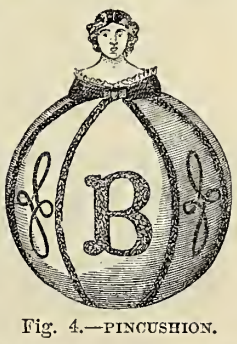


Fig. 4.—PINCUSHION.

Minnie C.—Instructions for making a card-receiver were given in the *American Agriculturist* a few months ago. We kept insects off of our rose-trees, by pouring tobacco-water over the stems, and the way we prepared the tobacco-water was to take the stumps of cigars our gentlemen left after smoking, put them into a bottle, cover them with water, and let them stand a day or two. After using from the bottle what you require, add more water, and shake it well, for future use.

M. J. K. says: "Dear Aunt Sue: Will you please give us the solution of the accompanying riddle? It is very old, and we can not find anybody who knows the answer. Papa says, 'write and ask Aunt Sue; if she can't tell you, nobody can.'"....This is the enigma:

"There was a man of Adam's race,
Who had a certain dwelling-place;
He had a house all covered o'er,
Where no man dwelt, since or before.

"It was not built by human art,
Of brick or lime in any part,
Of rock or stone in cave or kiln,
But curiously was wrought within.

"'Twas not in heaven, nor yet in hell,
Nor on the earth where mortals dwell;
Now, if you know this man of fame,
Tell where he lived and what his name."

According to Scripture, that "man" only tarried three days and three nights in that "curious" "dwelling-place," and his name was "Jonah."

Milly F. W., another puzzled one, writes: "I have been given a problem to find out, and I can't see any sense in it."...."Brooks and Smith went out shooting. Brooks shot four pigeons, and Smith shot Brooks. How many birds did they get in all?—Answer: 17."—Of course, the problem was given to you in writing, Milly; it is a sort of a *catch*, and the catch is in writing the B of Brook's name (as many do) like the figure 13. If you look at it now, with this explanation, you will wonder you didn't notice it before: "Brooks shot four pigeons, and Smith shot 13 rooks."—4+13=17.

The Doctor's Talks—About Iron and Steel.

To answer the simple questions as to the difference between cast and wrought iron, and between iron and steel, I thought best to begin back at the beginning, and last month I told you in what shape iron was found in the earth, the *ore*, and how it is separated from the ore, or *reduced*, as it is called. You will recollect that I told you it was by heating the iron ore with coal. That the coal or carbon took the oxygen away from the iron, and left that by itself. This is a very simple process, and is still followed, but it will answer for only the very purest ores, those that contain only iron and oxygen, or are pure oxides of iron. Much of the iron ore of the world, though very good ore, is not so pure as this, but has with it other matters, and iron can not be separated by simply roasting it with coal. One of these matters is *silex*, which you know in the form of pure sand, and in order to get the iron from these ores, the silex must be got rid of. So besides coal, there is put into the furnace with these ores, a lot of limestone. Lime at a high heat readily unites with the silex, and form a sort of glass, which melts and floats above the melted iron, the lime taking the silex away from the iron, leaves that to be drawn off. Whatever is added to an ore in this way, to aid in separating the metal, is called a *flux*, and the melted flux with the impurities of the ore, is the *slag*.

In whatever way iron is obtained from the ore, it is cast iron, which is usually run into a gutter in a bed of sand, from the sides of which, at right angles, go off shorter gutters, into which the melted iron runs, and there cools, as short, thick, rough bars known as *pigs*, and iron in this shape is *pig-iron*. It is supposed to have been given this name because the pigs in a row along the sides of the central gutter, reminded some one of a large litter of real pigs sucking at their mother. You know how many things are made from cast iron, from the heavy pillar that holds up a building, to the smallest hinge; you know that our stoves, our cooking pots and skillets, and an almost endless number of things are of cast iron. To cast these, molds have first to be made, and the pig-iron put into a furnace with coal and melted again, and when melted it is run into the mold or *cast*. I can not now tell you about the molds, other than that they are made by bedding a *pattern* of the article to be made of iron, in very fine sand, taking it out again, and then pouring in the melted iron to fill the place made by the pattern. Molding is a trade by itself, and one that often requires much skill and ingenuity; when there is a chance, boys and girls should try to visit a foundry, and see how these things are done. I have said that cast iron could be melted, and this makes it for many things the most useful kind of iron, but it is also very brittle. On every place there is in some corner a box or heap of old iron, where broken stove covers, kettles, pieces of farm machines, and other things, show that iron is not so strong but it will break; if you strike some not very thick piece of the old iron a sharp blow with a hammer, you will see how short it breaks; now look at the broken surfaces: they are not smooth like broken glass, but look all full of rough points. Cast iron is not pure iron, in

THEIR FIRST ACQUAINTANCE WITH WATER.

separating it from the ore, it has combined with some of the carbon or coal used in the furnace, and when it melts and runs from the furnace, it is a compound of iron and carbon; the amount of carbon varies from two to five per cent, i. e., in every hundred pounds of iron, there are from two to five pounds of carbon, and it is this which mainly makes the iron brittle, and also allows it to be melted; I say "mainly" because there are impurities in the ore which affect the quality of iron, but we need not talk of them now. This brings us to the real difference between cast and wrought iron—cast iron contains carbon, and wrought iron does not. To get wrought iron, then, we must get rid of the carbon, and how do you suppose this is done? By burning it out. You know that coal is carbon, and that it will burn, but the carbon in the cast iron is so mixed with the iron that it is difficult and slow to burn out. To make wrought iron, the pigs of cast iron are put into a very different kind of a furnace from the one used in melting cast iron; it has a broad hearth, and is so built that the flame will play down upon it, and a plenty of air will pass in also. Here the iron melts on the floor of the furnace, and as the flames rush over it they burn out the carbon; the iron is stirred now and then, and when it gets thick and pasty, and does not run any more, it is made into lumps or balls, and taken to the squeezer, a big hammer, which pounds the lump, and squeezes out any impurities, which remain melted while the pure iron is only pasty. This operation is called *puddling*, and the lumps are *blooms*. If we compare this iron with cast iron, we shall see how very different they are. No matter how small a piece you take, you will not be very likely to break it, but if you hammer at a piece it will spread, or in other words it is *malleable*, while cast iron will break instead. Then it is very difficult to melt wrought iron, so much so that it is not worked in that way. It is also very different from cast iron, from the fact that it can be *welded*. When heated very hot—white hot—wrought iron becomes very soft and pasty, and when a smith wishes to join two pieces, he puts both in the fire and heats them to this pasty state; he then puts them together on his anvil, and hammers them so that the two parts, being in this soft condition, stick together perfectly. There are other ways of making wrought iron from cast iron, and wrought iron is sometimes made directly from some ores, but the one I describe was the first, and is now much practiced. It has taken so long to tell about cast and wrought iron, that we must let steel go over to another month. Let us sum up. Cast and wrought iron really differ in this: wrought iron is nearly pure iron, while cast iron is a compound of iron and carbon. I say *nearly* pure, because in practice it is not found easy to remove every trace of carbon, though the amount left is very small, not more than one part in four hundred. Cast iron gets its carbon from the coal used in reducing it from the ore, and is turned into wrought iron by burning out this carbon. Cast iron is easy to melt, it will melt in a good hard-coal fire, while wrought iron is so difficult to melt, that very few persons have ever seen a piece that has been melted. Cast iron when hammered does not spread, but breaks off short, and shows a shining grained surface; the wrought spreads when hammered, and if heated may be worked into almost any desired shape, it is most difficult to break, and when broken has a dull, stringy fracture. Cast iron is more useful for some purposes, because it can be melted and cast into molds, while wrought iron must be worked by hammering, and joined by welding. Cast iron is often very hard, and the other much softer, as may be seen by filing or drilling the two. Now if you wish something to think of, try to count up the uses of iron in these two forms—cast and wrought—or imagine what a world this would be, should the supply of iron suddenly cease. We think of gold as a very valuable metal, but you will not be long in declaring which could be best spared, iron or gold.

THE DOCTOR.

The Ducklings First Experience.

Is there anything more cunning than a duckling? One is ever so many times funnier than a little chick, which seems to go at business as soon as out of the shell; but the duckling seems to be astonished, and looks as if it said to itself, "Where am I, and what am I here for?" Then when the little downy, puffy lump begins to run about, how awkward it looks. Such big feet and such a broad bill! The chick is brighter and livelier until you see the two where there is a plenty of water, and then the duckling's ways are the most pleasing. Ducks may be brought up from the egg without ever seeing any more water than a mere pan or trough for bathing, and appear to do well, but they are always seen at their worst on land, and at their best in the water, and when they are gracefully sailing about they are much handsomer than when waddling along on the ground. They are formed for the water, their feet, their shape, and all say plainly that they are water birds, and we do not think it right to keep them away from it. If you are in doubt, just ask the birds, or what is the same thing, show them the water, and they will say that they like it by going for it. Still ducklings do not like water in every way, as the picture shows, and they seem to be very much surprised that water coming down upon them is not pleasant. They heard the water, and they felt that they were made for it, but the water was rather too rough for them. Let us hope that their next acquaintance will be with smoother water, which they can look down upon, and not be obliged to look up at, as the surprised little things do in the engraving given above.

CLOTHES WRINGERS.

The well-known Standard Clothes Wringer, the "*Universal*," has again been improved by the addition of a *Purchase Gear*, making it turn with *half the power* of ordinary wringers. It will soon be in the hands of dealers everywhere. Prices as heretofore. Address METROPOLITAN WASHING MACHINE Co., R. C. BROWNING, Pres., 32 Cortlandt St., N. Y.

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Please mention this paper.

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SEE that **LIGHT BRAHMA** on page **316**, August number of this paper.

Prices down, down.

Never were so low before for

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OUR REDUCED PRICE-LIST NOW READY.

We continue to send single Watches by Express to any place, no matter how remote, with bill to collect on delivery, with privilege to the purchaser to open the package and examine the Watch before paying, and with no obligation to take it unless it is perfectly satisfactory.

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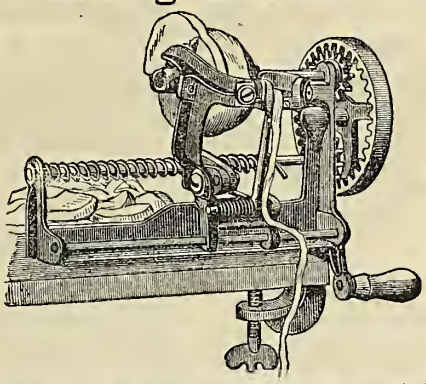

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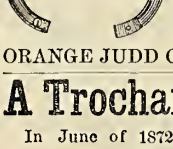

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In June of 1872 we gave illustrations of a Trochar and Cannula to be used in ringing a bull, and on page 13 (January) and page 97 (March) of this Journal for 1873 we described the use of this apparatus in relieving bloven in cattle. These articles have brought out a large demand for Trochars, and failing to find just the right kind among the makers of surgical implements, we have induced an establishment to undertake their manufacture. We give herewith a small engraving of the Trochar. These articles are now in the trade, and may be had of most dealers in agricultural implements. Those who can not get them from dealers can receive them from this office, prepaid, for $1.00.

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We are prepared to offer inducements, and solicit correspondence.
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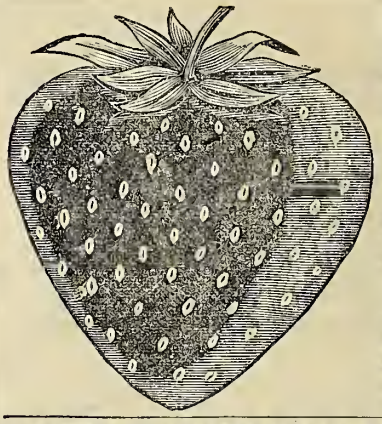

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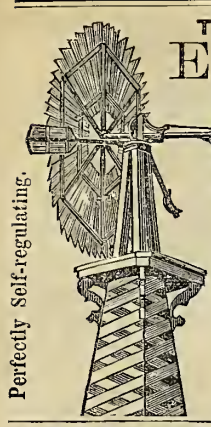

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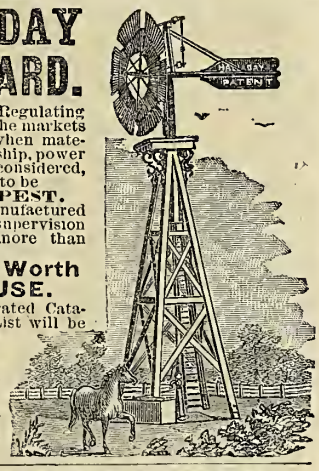

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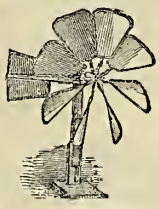

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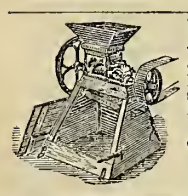

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MALLORY & SANFORD'S PATENT. The best in market, and largely used in this country and Europe. For sale by JOHN W. QUINCY, 98 William St., N. Y. City.

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Crushes all hard and brittle substances to **any required size.** Also, any kind of STONE for ROADS and for CONCRETE, &c. Address BLAKE CRUSHER CO., New Haven, Conn.

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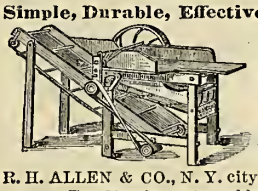

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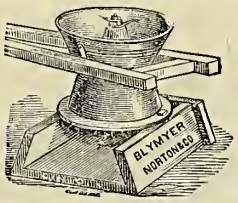

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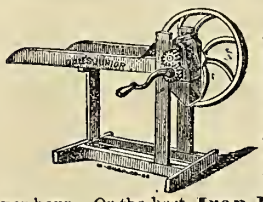

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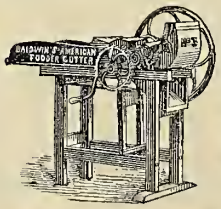

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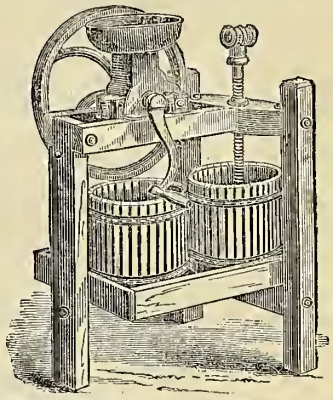

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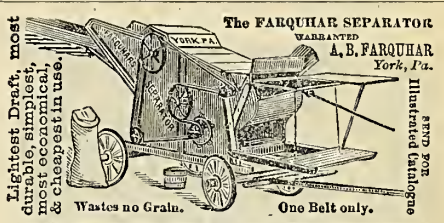

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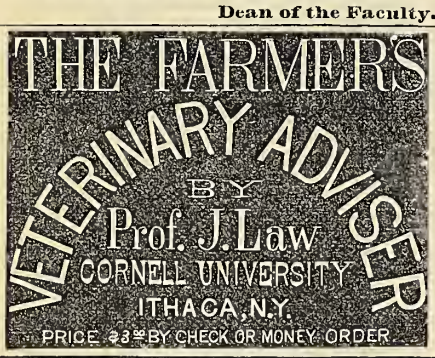

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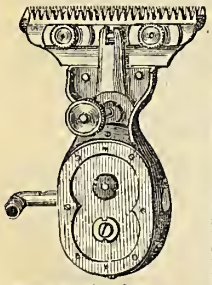

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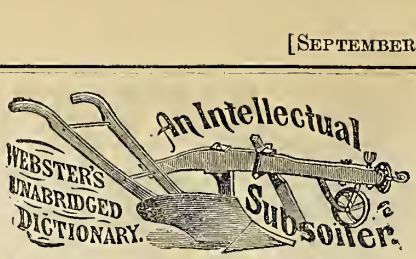

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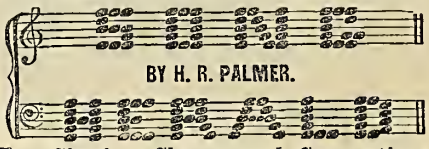

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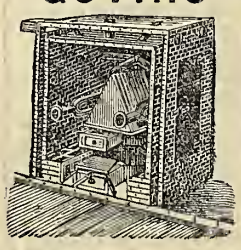

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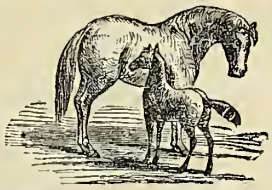

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 328.

The Potato Bug.—"Logan," Utah, asks, "Can you explain why the Colorado potato beetle has never migrated west of the locality in which it originated?"—The insect did not migrate eastward, until settlers planted potatoes, and provided it with food for its abundant increase, and thus tempted it to move eastward. In the opposite direction there is nothing to eat, and, like other armies, this of Colorado can not move without a *commissariat*.

A Tree-Fence.—"D. O. S.," Saginaw Co., Mich. There are several fences in the Western States, consisting of rows of trees, with wires stretched from one tree to another, that are satisfactory to their owners. One of these consists of maple trees, and some of white willows and cottonwoods. We see no reason why such fences might not be useful, and as permanent, or more so, as posts. The wires are fastened to the trees by staples in most of these fences. Where cottonwoods or willows thrive, these might be used for this purpose. We have not heard of the lightning injuring any wire-fence, and doubt if it would, if it should strike one.

Scab in Sheep.—"R. O. L.," Rock Island, Ill. Scab is a disease that is easily cured, if the proper remedy is sought. This is dipping in a decoction of tobacco and sulphur in hot water. Full directions for applying this remedy, and for the general management of sheep are given in Stewart's "Shepherd's Manual," price $1.50.

Fleas on Chickens.—"A. G.," Hamilton, Canada. To get rid of fleas, the chicken house should be *thoroughly* whitewashed—not half done—with hot lime-wash. The floor should be well sprinkled with a solution of carbolic acid, and the roosts thoroughly greased with a mixture of one pound of lard, one pint of raw linseed oil, a quarter of a pint of kerosene oil, and a quarter of a pound of sulphur. This will be rubbed off on to the feet, legs, and feathers of the fowls, and soon rid them of vermin.

The Best Grain for a Horse.—"H. B. B.," Waddam's Center, Ill. The best grain for a horse is certainly oats; the next is barley; corn as a steady feed is not wholesome at all. Oats have about the requisite quantity of nutritious and indigestible matter to be healthful, and barley approaches very near to oats in this respect. The actual values of these grains are as nearly as possible equal to their usual market values, the latter being in reality based upon the former.

Diseases of Cattle.—"H. S.," Durham Park, Ks. There are several books on diseases of cattle that would be useful to a stock breeder. Different authors have different methods of treatment, and have observed various different phases of the same disease. It is therefore sometimes useful to consult more than one author. Dadd's "American Cattle Doctor," price $2.50, Clater's "Cattle Doctor," an English work, price $8.00, and a new work by Prof. Law, "The Farmer's Veterinary Adviser," price $3.00, are all useful to keep in the house. (We shall be glad to hear from you as you suggest.)

Sowing Orchard Grass.—"E. G. P.," Sulphur Springs, W. Va. Orchard grass may be safely sown with rye in September. It survived the winters of New York and Pennsylvania with safety, and could hardly be endangered in your milder climate. It resists summer drouths very stubbornly, and is a valuable grass for early pasture or hay, if cut early. As it is fit for cutting when red clover is in blossom, it is profitable to sow both; but as there would be some doubt of the clover passing the winter safely, unless sown very early this month, it would be best to sow it early in the spring. Orchard grass is apt to stool, and should therefore be sown thickly and evenly. A bushel and a half of orchard grass seed per acre (14 pounds to the bushel) would be a proper quantity, and of clover, 6 quarts per acre.

Potatoes Mixing.—"Farmer." There are some who claim that potatoes of different kinds, when planted near to each other, will mix. We do not believe it, and have never seen an alleged case that could not more rationally be accounted for by bud variation, instances of which from buds above ground are common.

Carrying the Tail to one Side.—"Subscriber," Juniata Co., Pa. To remedy the fault in a horse which carries the tail to one side, a simple operation may be resorted to, which is neither painful nor injurious. It is to cut through the skin on the side of the tail to which it is desirous to draw it over, a few scores close together, removing the skin between two or three of the scores. Or the skin may be fired with a sharp-edged instrument, and a few scores made close together upon the side required. Then a thick pad is placed upon the crupper, so as to force the tail into the proper position, and keep it there until the skin on the side opposite to the pad is healed. After that the tail will keep its proper position.

Turning Eggs During Incubation.—Vaniz, Mississippi. It would be little trouble to pass the hand over the eggs in an incubator, and turn them occasionally, if thought necessary. It can do no harm, and may do good. Dipping the eggs in tepid water two or three times during the process is advisable, and in doing this they will be turned and the bad ones detected.

To Prevent Washing of Hillsides.—"J. A. C.," Villanow, Ga. There are objections to making hillside ditches, or terracing the sloping surface to prevent washing. Washing may be prevented by plowing in a diagonal direction down the slope; first throwing two furrows together, so as to make ridges every 20 feet apart, and then plowing the spaces between these in lands, with open furrows between them. The rain will then gather slowly from 10 feet upon each side, into the open furrows, along which it will flow gently, not having much fall, until it reaches the bottom; where it will spread all over the surface without injury to it. If in addition to this the land be subsoiled once every four or five years, most of the rain would be absorbed, and the surface would not wash and gully.

Draining by Wells.—"W. W.," Fulton Co., Ill. In draining by wells, the wells must be dug down to a gravel or sandy subsoil, or at least one that will absorb the water. The drains should be of the usual depth, 4 feet. A fall of six inches in 100 feet, would be sufficient for the drains. In case sediment should collect in the wells to interfere with their working, which is very improbable, it would be easy to clear them out every 20 years or so. Where there is a deep heavy clay soil, and no gravel, this method would not be effective.

Kohl-Rabi.—"W. W. P.," Oakwood, D. T. Kohl-Rabi, or turnip-rooted cabbage, is considered as a valuable food for stock, especially milk cows, sheep, and pigs. It has rarely been grown in this country, except in gardens, but in England and parts of Europe it is largely grown as a field crop for stock feeding.

Profitable Crops in the South.—"T. G.," Kittrells, N. C. Neither flax nor hops at present promise to be profitable in the Southern States. Flax is only profitable where there is a near-by market for the seed or fiber, and hops depend very much upon a peculiar climate and soil for quality, and of course price. The idea that these special crops are highly profitable is delusive to a very great extent, on the whole they are not inviting to any farmers, but those who understand the "ins and outs" of the business. Cotton and tobacco can not be made profitable in the long run, unless used as a part of a rotation in which they take their regular place alternating with other crops, as corn, wheat, peas, potatoes, clover, etc., which can be used as feed for stock, and made the basis of a supply of manure to enrich the soil and gradually increase its fertility. It is no easy matter to manage a farm skillfully, and yet it is necessary for success to manage it so that, while the crops grown may be profitable, the profit may not be made at the expense of the soil, which is the capital. Without knowing the previous mode of your management, we can only make these general suggestions.

Winter Oats.—"W. C. M.," Wicomico Co., Md. We believe Messrs. Landreth & Sons, of Philadelphia, have fall oats for sale, if not, they would probably procure them for you.

Grass for Pasture.—"B. B.," Denison, Iowa. If a temporary pasture only is required, rye sown in September, or even later, would furnish excellent feed early in spring, and clover sown in the spring would supply fall pasture. It is difficult to procure a sufficient growth of the ordinary field grasses, as timothy, orchard grass, or blue grass, to make a pasture the first year. Two season's growth at least are required to make a pasture of these grasses. Oats or Hungarian grass would make a good crop to be cut and fed green, but to pasture either would be to waste the most of it. If a peck of timothy and one bushel of orchard grass per acre were sown alone early in September on well prepared ground, the crop might be pastured next summer, unless a very dry season should occur. If two-thirds of the seed were sown, and six quarts of clover per acre were added in the spring, the pasture might last three or four years.

Plants Named.—"M. L. H.," Hutton, Ill. The low, branching pink-flowered plant is *Sabbatia angularis*, the "American Centaury," and in some localities called "Star-flower," and "Bitter-bloom." It belongs to the Gentian Family, and, like the gentians, is very bitter; it is sometimes used as a tonic medicine.... "A. H. F.," Ipswich, Mass. The Variegated Spurge, *Euphorbia marginata*, a native of Kansas and Nebraska. It is a quick-growing, much-branched annual, the bracts or floral leaves of which are margined with white. It is often cultivated in gardens, where it produces a pleasing effect in contrast with dark-colored plants.

Martynia Pickles.—Several Inquirers. The fruit must be gathered when about half grown or less; it must be very tender, so that it will break short, without any fibre. A little practice will show the proper size. Gather every two or three days, as they soon get hard, and put at once into brine strong enough to float an egg. They are to remain in brine about 10 days. If desired to keep them longer before pickling, change the brine for fresh. When ready to pickle, take the martynias from the brine, wash, put into a jar, and cover them with vinegar; let them soak for a day or two. Make a pickle with two pounds sugar to one gallon vinegar, and such spices, and as many, as are fancied; we use cloves, allspice, and mace; any others may be added. Tie the spices in a muslin bag, put this with the sugar into the vinegar, and bring to a boil; when hot, pour over the martynias, which have been removed from the vinegar in which they are soaked, and placed in a jar or keg. Place the bag of spices in with the martynias, where it may remain until the strength is exhausted. As with other pickles, it is well to heat up the vinegar at intervals of two or three days, and pour back over the martynias, doing this two or three times. Those who have once tried martynia pickles, will be sure to provide for a supply every year.

Salted Cucumbers.—Questions as to these come every year. We do not know of any market for them in New York. All pickling establishments that we know anything about, purchase the cucumbers in the fresh state, and treat them in their own way. During the late war there was a demand for pickles in any form, but at present salted cucumbers, whatever may be the case elsewhere, are not wanted in the New York market.

Chopped Pickle.—This is easily prepared and generally liked. We every year put up a large jar of it, though we have no rule for making it. Green tomatoes, cabbage, cucumbers, peppers, and a few onions, are all chopped small, well salted, and allowed to stand over night. The next day they are all drained on a colander, and a boiling vinegar, to which 2 lbs. sugar for each gallon, and spice *ad-libitum* has been added, is poured over the mixture. In a few days drain off the vinegar, boil, and return it.

Ayrshire Herd Books.—"W. J. E."—If the editors of a herd book have made certain rules guiding them in recording entries, they will naturally and consistently adhere to them. But as regards this breed, there need be no trouble, as there are three Ayrshire Herd books, and the one referred to is not the one in which this stock in question was previously entered, as it is only in its first volume so far. Probably the Herd Book you should have selected is that edited by Mr. J. D. W. French, North Andover, Mass.

The Cause of Smut in Corn.—"F. H. D.," Lowell, Mass. The immediate "cause of smut" is the presence of the spores (or seeds) of *Ustilago maydis*. The swellings and distortions seen on various parts of the plant, especially upon the young grain, are due to the presence of a minute fungus (to which the above name has been given) that lives and grows within the tissues of the plant; the black substance, which, when ripe, becomes a black powder, is the reproductive portion, or spores, which answer the same purpose that seeds do in plants of a higher grade. These spores are individually so exceedingly minute that, when magnified 250 diameters, they appear only as large as the head of an ordinary pin, and may easily escape detection if attached to the seed corn when sown. These spores may be brought by the wind, or carried to the field with the manure, and smut appear in a field even if the precaution has been taken to pickle the seed before sowing.

Red Ants.—We have this past summer received numerous letters about the small red ants that so often give the housekeeper so much trouble. These letters among them enumerated about all the remedies we had ever heard suggested, stating that they had been tried in vain. At length, after the letters, came the ants themselves, invading and rendering useless a pantry. We procured some fresh "Persian Insect Powder," and sprinkled it over the shelves; the next morning myriads of dead ants were swept up. Two or three applications, and not an ant was to be seen. This "Insect Powder" (Pyrethrum) is now sold by the pound in bulk by the leading druggists. It should be fresh and strong smelling, and be kept in a well closed bottle or jar.

White Huckleberries.—"P. W. T." sends specimens collected in Mansfield, Mass., and wishes information about them. Huckleberries are apt to vary in the color of their fruit, several species producing both blue and black berries; occasionally the fruit is red, and more rarely white. We have had specimens from most of the New England States, but never heard of their occurrence in any considerable quantities. Should it ever happen that the wild fruit gets sufficiently scarce, to make the cultivation of the huckleberry profitable, the white variety will no doubt be much prized.

Very Like a Swindle—Be careful WHAT you Sign.—Much trouble comes to farmers, from the bogus lightning-rod men, and other swindlers, through carelessly signing documents they do not read carefully and see what they really amount to. A neighbor signed an agreement (as *he* supposed) to pay $15 for a lightning-rod. When the "principal" disappeared his "successor" presented, the other day, the matured agreement, which was, in fact, $128, less $15, or $113!!—For some time past an "Agricultural Manufactory" in New Hampshire has had an agent or agents traveling, establishing "agencies" in New England, for the sale of farm implements. The local agent appointed, usually a farmer, gives an order for a lot of sample implements that he thinks he can use or dispose of readily; they are "billed" to him at a good discount, and he (foolishly) gives a note for them at once, payable a year ahead, or when they are sold, perhaps. His note, duly executed, is carried away by the traveling agent, is turned over to other parties, but the maker of the note whistles in vain for the implements. To quiet him, various excuses, "fire," "strike of hands," etc., are given for not promptly forwarding the implements. Since our humbug article was in type, we have received a list of 23 persons, in as many towns in Connecticut, who have given their notes thus, and we hear that there are a multitude of others in like condition, some of whom gave their notes, six, eight, and ten months ago for $100 and upwards, and some of whom have not yet been able to get a single one of the things ordered and immediate delivery promised. A meeting of these men is soon to be held in Hartford, when further facts will come out. Let all mark well the heading to this item, and *heed* it.

Gathering Clover Seed.—"D. A. McA.," Jackson, Tenn. Two crops of clover seed cannot be gathered in one season from the same field. To save a crop of seed, the clover is cut early, or when in full blossom, for hay, and is then left to grow until it blossoms a second time, when it matures its seed in September. The seed may be gathered by cutting it with a mowing machine, to the cutter-bar of which a piece of sheet iron is fixed by two or three small bolts. The sheet-iron apron drags behind the cutter-bar. The holes for the bolts may be drilled through the cutter-bar by any blacksmith, and when done with, the sheet iron apron may be removed. The cutter-bar may be raised to cut as high as possible, and a machine having an adjustable bar would be most suitable for this work. The clover heads gathered upon the apron may be raked off from time to time in heaps, which may be left to be rained upon and dried until cured. When finally dried, the heads are stored until cold weather, and the seed should be hulled upon a dry, frosty day.

Ticks on Lambs.—"J. L. M.," Washington Co., Pa. Every person who keeps sheep ought to have a good hand-book to which he may refer for advice and directions as to their management. The small cost of such a book would be repaid many times in a year to one who keeps a flock. Refer to Stewart's Shepherd's Manual, for a method of destroying ticks on lambs.

Feeding Oats to a Colt.—"E. D.," Westfield, N. J. There is no truth in the idea that to feed whole oats to a colt will "cause a distension of the veins of the lower jaw, and attract the blood and humors down into the eye, and cause blindness." But it is better to have oats crushed for a young colt, or even for horses, as they are more digestible when so treated than when fed whole. A colt of two months should not have many oats. A handful daily is sufficient to begin with.

Canning Green Corn.—Each season of green corn we have numerous complaints of failures in canning it, and asking how it should be done. We must answer now, as in former seasons, that it is not practicable on a small scale, as it will not pay to go to the expense of the apparatus, and give the time required, simply to put up a family supply. Moreover, with the most experienced the process is not certain, and the regular canners have more trouble with this, than with any other article, and often fail altogether. The corn is boiled, cut from the cobs, put into cans, and the space being filled with a syrup of sugar and salt, the can is soldered tight. The cans are then placed in a bath of a solution of *chloride of calcium*, a salt obtained from the refuse of salt works; a solution of this has a much higher boiling point than water, and the cans being placed in it, they are heated several degrees above 212°. After boiling in this for four hours, the cans are taken out, a small hole is pricked in the top of each, and as soon as the steam has blown off, the holes are at once closed by a drop of solder, and the cans returned to the bath for another boiling of three hours' duration. It will be seen that the process is quite too troublesome for the average housekeeper.

Top-dressing Wheat with Straw.—"R. W. W.," Perry, N. Y. It would do no injury to spread straw upon fall wheat as a protection against frost. On the contrary it might turn out to be of great benefit. Spread very evenly to get the most good.

To Cure a Sucking Cow.—"G. W. D.," New Brunswick, N. J. Try the perforated bit, described in the *American Agriculturist* for July, 1876.

Dry Root Houses.—"A. G.," Ontario. In the *American Agriculturist* for Oct., 1873, and Apr., 1876, there are descriptions and illustrations of different kinds of above-ground root houses. If the soil is wet, it is only necessary to build the most suitable one of these upon the surface, and dig a sufficient drain around it to carry off the water, procuring the earth for covering from the drain or elsewhere.

Double Plow—Farming in Louisiana.—"C. N. F.," Chelsea, Mass. The Deere Double Plow is an excellent implement for light soils. It can be procured of Deere & Co., Moline, Ill. There is no book that treats specially of farming in Louisiana. As you are acquainted practically with agriculture all that is necessary in beginning in that locality is to observe the methods of the farmers there, and to adapt your own experience to the peculiar necessities of your new situation. It is well to make innovations cautiously, and be willing to learn some things from your new neighbors.

Coco-grass. Nut-grass.—"C. H. C.," Ark. This is not a proper grass, but belongs to the related though very distinct family of sedges. Its botanical name is *Cyperus rotundus*, var. *Hydra*, and multiplies by means of numerous small nut-like tubers which are abundantly produced under ground. If any of our friends have been able to successfully subdue this, in many places a serious pest, we shall be glad to know the treatment they found most efficacious.

Artificial Tobacco.—The present course of invention or improvement so called, threatens to displace everything, and replace it with a substitute. Thus for butter and cream in cheese, we have the oil of tallow, or oleo-margarine; for coffee we have chickory; for leather we have paper; for wool, shoddy; for sugar, glucose from sawdust; and now we have paper tobacco, "a much improved article, and better in every way than the natural leaf" the inventors say. It is said every steamer to Havana now takes ont several thousand reams of straw paper, soaked in the juice of tobacco stems and other waste, rolled, veined, and printed with spots to closely imitate the natural leaf. It is then made up into cigars both as filling and wrappers, or mixed with leaf and returned here to be sold as real Havana cigars. No wonder that Connecticut seed-leaf goes a begging!

Cotton Seed for Manure.—"W. J. E.," Birmingham, Ala. The usual method of using cotton seed, when there has been no time to compost it for a fertilizer, is to scatter 30 or 40 bushels per acre broadcast and plow it under. For winter oats, to be sown this month, the cotton seed may be scattered, and the oats sown, and both plowed in together with a light furrow. It would probably be better to use 100 lbs. of phosphate early in the spring than now at the sowing. If possible to do it, the cotton seed should be rotted by composting with some yard or stable manure, and some leaf mold or swamp muck.

The Morel.—"S. P. W.," Quincy, Ill.—This highly esteemed edible fungus, *Morchella esculenta*, is a native of this country, as well as of Europe and Asia. We have known of no attempts to cultivate it, nor can we learn that it has been done in Europe. It being found more abundantly upon land recently burned over, than elsewhere, it was formerly the custom of the German peasants to set fire to the woods and copses, in order to induce a growth of the morel; this became so serious a matter that it was prohibited by very stringent laws. It is likely that it may be cultivated, by imitating the natural condition of the ground on which it is found wild, and taking up some of the earth where it grows, to stock the bed with spawn.

State, County, and other Fairs in 1876.

State and Industrial Fairs.

Alabama	Montgomery	Oct. 24-29
American Institute	New York	Sept. 6-Nov. 11
California	Sacramento	Sept. 18-23
Camden Industrial	Camden, N. J.	Oct. 2- 4
Centennial	Philadelphia	May 10-Nov. 10
Connecticut	Hartford	Sept. 12-15
Chicago Industrial Ex.	Chicago, Ill.	Sept. 6-Oct. 9
Illinois	Ottawa	Sept. 4- 9
Indiana	Indianapolis	Sept. 25-Oct. 18
Indiana Industrial	Worthington	Oct. 2-6
Iowa	Cedar Rapids	Sept. 11-15
Iowa Industrial	Des Moines	Oct. 5-Nov. 5
Kansas City Exhibition	Kansas City, Mo.	Sept. 18-23
Maryland Hort. Society	Baltimore	Sept. 19-22
Mass. Hort'l Society	Boston	Sept. 19-22
Michigan	Jackson	Sept. 18-22
Minnesota	St. Paul	Oct. 3- 6
Nebraska	Lincoln	Sept. 25-29
Nevada	Reno	Sept. 11-16
New Hampshire	Manchester	Oct. 3- 5
New Jersey	Waverley	Sept. 18-22
New York	Albany	Sept. 11-15
New York Hort. Soc'y	New York	Sept. 19-22
Ohio	Columbus	Sept. 4- 8
Oregon	Salem	Oct. 9-15
St. Joseph Agr'l Ex'n	St. Joseph, Mo.	Sept. 25-30
St. Louis Association	St. Louis, Mo.	Oct. 2- 7
Texas	Austin	Nov. 14-18
Virginia	Richmond	Oct. 31-Nov. 3
Wisconsin	Milwaukee	Sept. 11-16
Worcester Hort. Soc'y	Worcester, Mass.	Sept. 20-22

CENTENNIAL SPECIALS.

Autumn Butter and Cheese, at Philadelphia		Oct. 17-21
Autumn Honey and Wax	do.	Oct. 23-Nov. 1
Autumn Vegetables	do.	Sept. 19-23
Cereals	do.	Sept. 25-30
Northern Pomological Products.	do.	Sept. 11-16
Nuts	do.	Oct. 23-Nov. 1
Peaches	do.	Sept. 4- 9
Potatoes and Feeding Roots	do.	Oct. 2- 7

Live Stock.

Dogs	Sept. 1- 8	Poultry	Oct. 27-Nov. 6
Horses	Sept. 1-14	Sheep	Oct. 10-18
Neat Cattle	Sept. 21-Oct. 4	Swine	Oct. 10-18

District Fairs.

Indiana, Northeastern	Waterloo	Oct. 10-13
Iowa, No. theastern	Dubuque	Sept. 2- 4
Iowa, Northern	Bismark	Sept. 19-22
Minnesota, N. Western	Winona	Sept. 25-30
New York Central	Utica	Sept. 5- 8
New York, N. Western	Baldwinsville	Sept. 21-23
New York, Western	Rochester	Aug. 29-Sept. 2
Ohio, Central	Mechanicsburg	Sept. 19-22
Ohio, Central	Orrville	Oct. 11-14
Ohio, Northern	Cleveland	Sept. 11-15
Ohio, Southern	Dayton	Sept. 25-29
Ohio, Western	Piqua	Oct. 3- 6

PROVINCIAL FAIRS.

Colchester	Truro, N. S.	Oct. 9-13
Fruit Growers' Asso'n	Wolfville, N. S.	Oct. 4- 5

County and Town Fairs.

CONNECTICUT.

Fairfield	Danbury	Oct. 3- 7
New Haven	Meriden	Sept. 20-22

NEW HAMPSHIRE.

Contocook	Hillsboro' Bridge	Sept. 19-20
Conn. River Valley	Claremont	Sept. 5- 7
Cheshire	Keene	Sept. 19-21
Grafton	Plymouth	Sept. 26-28
Hillsborough	Nashua	Sept. 12-13
Merrimack	Concord	Sept. 20-21
Oak Park Association	Greenfield	Sept. 14-15
Stratford	Dover	Sept. 12-14

MASSACHUSETTS.

Barnstable	Barnstable	Sept. 19-20
Berkshire	Pittsfield	Oct. 3- 5
Bristol	Taunton	Sept. 26-28
Bristol Center	Myrick's	Sept. 13-15
Deerfield Valley	Charlemont	Sept. 21-22
Essex	Danvers	Sept. 26-27
Franklin	Greenfield	Sept. 28-29
Hampden	Springfield	Oct. 3- 4
Hampden, East	Palmer	Sept. 21-22
Hampshire	Amherst	Sept. 26-27
Hampshire, Franklin & Hamp'n	Northam'ton	Oct. 4- 6
Highland	Middlefield	Sept. 14-15
Hingham	Hingham	Sept. 27-28
Hoosac Valley	North Adams	Sept. 19-21
Housatonic	Great Barrington	Sept. 27-29
Marshfield	Marshfield	Oct. 4- 6
Martha's Vineyard	West Tisbury	Oct. 3- 4
Middlesex	Concord	Sept. 27-29
Middlesex, North	Lowell	Sept. 27-28
Middlesex, South	Framingham	Sept. 19-20
Nantucket	Nantucket	Sept. 27-28
Norfolk	Readville	Sept. 28-29
Plymouth	Bridgewater	Sept. 20-22
Union	Blandford	Sept. 19-20
Worcester	Worcester	Sept. 21-22
Worcester, North	Fitchburg	Sept. 26
Worcester, Northwest	Athol	Oct. 3- 4
Worcester, South	Sturbridge	Sept. 7- 8
Worcester, Southeast	Milford	Sept. 27-28
Worcester, West	Barre	Sept. 28-29

NEW YORK.

Allegany	Cuba	Sept. 26-29
Broome	Maine	Sept. 26-28
Broome	Whitney's Point	Sept. 6- 8
Cattaraugus	Cattaraugus Reserva'n	Sept. 25
Cattaraugus	Little Valley	Sept. 19-21
Cayuga	Moravia	Sept. 26-28
Chautauqua	Jamestown	Sept. 19-22
Chemung	Elmira	Oct. 5- 7
Chenango	Sherburne	Sept. 18-20
Columbia	Hudson	Sept. 26-28
Dutchess	Poughkeepsie	Oct. 3- 6
Dutchess	Washington Hollow	Sept. 19-21
Erie	Hamburg	Sept. 12-15
Essex	Westport	Sept. 6- 8
Franklin	Fort Covington	Sept. 19-21
Franklin	Malone	Sept. 26-28
Genesee	Batavia	Sept. 13-14
Greene	Cairo	Sept. 20-21
Hamilton	Earlville	Sept. 27-29
Herkimer	Herkimer	Sept. 27-29
Herkimer	West Winfield	Sept. 18-20
Jefferson	Antwerp	Sept. 5- 7
Jefferson	Carthage	Sept. 13-15
Jefferson	Redwood	Aug. 30-Sept. 1
Jefferson	Watertown	Sept. 20-22
Lewis	Lowville	Sept. 19-21
Madison	Brookfield	Oct. 2- 4
Madison	Hamilton	Sept. 27-29
Montgomery	Fonda	Sept. 19-21
Niagara	Lockport	Oct. 5
Oneida	Booneville	Sept. 5- 7
Oneida	Rome	Sept. 18-22
Oneida	Taberg	Sept. 25-27
Oneida	Trenton	Sept. 12-14
Oneida	Vernon	Sept. 30
Oneida	Waterville	Sept. 26-27
Onondaga, (Indian)	Onondaga Castle	Sept. 20-24
Onondaga	Onondaga Valley	Sept. 26-27
Onondaga	Skaneateles	Sept. 20-21
Ontario	Canandaigua	Sept. 20-22
Orleans	Albion	Sept. 29-30
Oswego	Fulton Station	Sept. 19-22
Oswego	Mexico	Sept. 12-14
Oswego	West Phœnix	Sept. 26-28
Otsego	Cooperstown	Sept. 25-27
Otsego	Edmeston	Sept. 12-14
Otsego	Oneonta	Sept. 26-28
Otsego	Otsego	Sept. 28-30
Otsego	Schenevus	Sept. 19-21
Otsego	Unadilla	Sept. 20-22
Richland	Sandy Creek	Sept. 13-15
St. Lawrence	Canton	Sept. 12-14
St. Lawrence	Gouverneur	Sept. 6- 8
St. Lawrence	Potsdam	Sept. 19-21
Saratoga	Saratoga Springs	Sept. 5- 8
Schoharie	Schoharie	Oct. 3- 5
Schuyler	Watkins	Sept. 14-16
Seneca	Seneca Falls	Oct. 3- 5
Steuben	Bath	Sept. 27-29
Suffolk	Riverhead	Oct. 3- 5
Tompkins	Ithaca	Sept. 11-13
Warren	Warrensburg	Sept. 12-15
Washington	Sandy Hill	Sept. 5- 8
Wayne	Clyde	Sept. 27-29
Yates	Penn Yan	Sept. 22-26

NEW JERSEY.

Union	Clarke	Oct. 3- 6

PENNSYLVANIA.

Centre	Bellefontaine	Oct. 3- 6
Chartiers Valley	Cannonsburg	Sept. 20-22

OHIO.

Allen	Lima	Sept. 26-29
Ashtabula	Jefferson	Sept. 26-29
Athens	Athens	Sept. 28-29
Auglaize	Wapakonetta	Sept. 27-29
Belmont	St. Clairsville	Sept. 12-14
Butler	Hamilton	Oct. 3- 6
Carroll	Carrollton	Oct. 3- 6
Clermont	Boston	Sept. 12-15
Clinton	Wilmington	Sept. 12-15
Columbiana	New-Lisbon	Sept. 26-29
Coshocton	Coshocton	Sept. 26-29
Crawford	Bucyrus	Sept. 26-29
Cuyahoga	Chagrin Falls	Sept. 6- 8
Drake	Greenville	Sept. 19-22
Defiance	Defiance	Sept. 19-22
Delaware	Delaware	Sept. 26-28
Erie	Sandusky	Sept. 19-22
Fairfield	Lancaster	Oct. 11-14
Fulton	Wauseon	Sept. 27-29
Gallia	Gallipolis	Sept. 27-29
Geauga	Burton	Sept. 20-22
Greene	Xenia	Oct. 4- 6
Guernsey	Cambridge	Sept. 25-28
Hancock	Findlay	Oct. 4- 7
Hardin	Kenton	Oct. 11-14
Harrison	Cadiz	Oct. 3- 6
Hocking	Logan	Oct. 5- 7
Huron	Norwalk	Sept. 26-29
Jackson	Jackson C. H.	Sept. 14-15
Jefferson	Smithfield	Sept. 27-29
Knox	Mt. Vernon	Sept. 26-29
Lake	Painesville	Oct. 4- 6
Lawrence	Ironton	Sept. 12-15
Licking	Newark	Oct. 3- 6
Licking	Potaskala	Sept. 26-29
Logan	Bellefontaine	Oct. 3- 6
Lorain	Elyria	Oct. 30-31
Lucas	Toledo	Sept. 26-29
Mahoning	Canfield	Oct. 3- 5
Marion	Marion	Oct. 3- 6
Medina	Medina	Sept. 19-21
Meigs	Rock Spring	Oct. 6- 7
Mercer	Celina	Sept. 19-22
Miami	Troy	Sept. 20-23

Morgan	McConnellsville	Sept. 20-22
Morrow	Mt. Gilead	Sept. 20-22
Muskingum	Zanesville	Oct. 3- 7
Ottawa	Port Clinton	Sept. 26-28
Paulding	Paulding	Sept. 26-29
Perry	New Lexington	Sept. 20-22
Pickaway	Circleville	Sept. 19
Preble	Eaton	Sept. 26-29
Putnam	Ottawa	Oct. 3- 6
Richland	Mansfield	Oct. 3- 6
Ross	Chillicothe	Sept. 12-15
Sandusky	Fremont	Oct. 3- 6
Shelby	Sidney	Sept. 19-22
Stark	Canton	Sept. 26-30
Summit	Akron	Oct. 3- 6
Trumbull	Warren	Sept. 12-14
Tuscarawas	Canal Dover	Oct. 3- 6
Union	Marysville	Oct. 3- 6
Van Wert	Van Wert	Sept. 21-23
Warren	Lebanon	Sept. 20-22
Washington	Marietta	Sept. 26-29
Wayne	Wooster	Sept. 27-30
Williams	Bryan	Sept. 27-29
Wood	Tontogany	Sept. 26-29
Wyandot	Upper Sandusky	Sept. 26-29

INDIANA.

Allen	Fort Wayne	Sept. 11-15
Bartholomew	Columbus	Sept. 12-16
Boone	Lebanon	Sept. 4
Boone	Thorntown	Sept. 18-23
Cass	Logansport	Sept. 4- 9
Carroll	Delphi	Sept. 26-29
Clinton	Middle Fork	Sept. 4- 8
Clinton	Frankfort	Sept. 11
Clay	Brazil	Sept. 11-16
Daviess	Washington	Sept. 12-16
Elkhart	Goshen	Oct. 18-21
Fountain	Covington	Oct. 3- 6
Franklin	Brookville	Sept. 5- 8
Fulton	Rochester	Sept. 14-16
Grant	Marion	Sept. 26-29
Greene	Linton	Sept. 26-30
Gibson	Princeton	Sept. 18-22
Hamilton	Cicero	Aug. 29-Sept. 1
Harrison	Corydon	Aug. 29-Sept. 1
Huntington	Huntington	Sept. 26-27
Jackson	Seymour	Sept. 12-15
Jasper	Rensselaer	Sept. 12-15
Jasper	Remington	Sept. 22-25
Jay	Portland	Sept. 19-22
Jefferson	Madison	Sept. 25-29
Jennings	Vernon	Sept. 12-15
Johnson	Edinburg	Sept. 18-23
Knox	Vincennes	Oct. 16-21
Kosciusko	Warsaw	Sept. 26-30
La Grange	La Grange	Sept. 27-29
Lawrence	Mitchell	Sept. 26-30
Madison	Anderson	Sept. 5- 8
Marion	Valley Mills	Sept. 7- 9
Martin	Loogootee	Sept. 11-16
Miama	Peru	Sept. 11-15
Morgan	Martinsville	Sept. 12
Noble	Ligonier	Sept. 19-22
Owen	Gosport	Sept. 5- 9
Parke	Bridgeton	Aug. 28-Sept. 2
Perry	Rome	Oct. 2- 6
Pike	Petersburg	Sept. 4- 9
Posey	New Harmony	Sept. 12-15
Porter	Valparaiso	Sept. 27-29
Randolph	Winchester	Sept. 19-22
Rush	Rushville	Sept. 12-15
Shelby	Shelbyville	Sept. 5- 9
Spencer	East Enterprise	Sept. 12-15
Stark	Knox	Sept. 23-30
Sullivan	Sullivan	Aug. 29-Sept. 2
Tipton	Tipton	Sept. 5- 8
Vermillion	Newport	Sept. 5
Vigo	Terre Haute	Sept. 19-23
Warren	West Lebanon	Sept. 4- 9
Warrick	Boonville	Oct. 10-14
Wayne	Centreville	Sept. 5- 7
Wells	Bluffton	Sept. 25-28

ILLINOIS.

Adams	Camp Point	Sept. 12-16
Boone	Belvidere	Sept. 19-22
Brown	Mt. Sterling	Sept. 5- 8
Bureau	Princeton	Sept. 12-15
Carroll	Mt. Carroll	Sept. 19-23
Cass	Virginia	Aug. 29-Sept. 1
Champaign	Champaign	Aug. 29-Sept. 1
Christian	Taylorville	Sept. 25-29
Clark	Marshall	Sept. 21-23
Clay	Louisville	Sept. 12-15
Clay	Flora	Sept. 26-60
Coles	Charleston	Sept. 12-16
Crawford	Robinson	Sept. 10-12
Cumberland	Majority Point	Sept. 6- 9
De Kalb	Sycamore	Sept. 27-29
De Kalb	De Kalb	Sept. 14-18
Douglas	Tuscola	Sept. 19-22
Du Page	Wheaton	Sept. 12-14
Edgar	Paris	Sept. 5- 9
Edwards	Albion	Oct. 3- 6
Effingham	Effingham	Oct. 3- 6
Fayette	Vandalia	Sept. 27-30
Ford	Paxton	Sept. 19-22
Ford	Gibson	Sept. 12-15
Franklin	Benton	Sept. 26-29
Fulton	Avon	Sept. 26-29
Gallatin	Shawneetown	Oct. 2- 5
Greene	Carrolltown	Sept. 26-28
Grundy	Morris	Sept. 26-28
Hardin	Elizabethtown	Sept. 20-23
Henderson	Biggsville	Sept. 26-29
Henry	Cambridge	Aug. 28-Sept. 1
Iroquois	Onargo	Sept. 5- 8
Jackson	Murphysboro	Oct. 11-14
Jasper	Newton	Sept. 26-29
Jersey	Jerseyville	Oct. 10-13
Jo Daviess	Galena	Sept. 26-29
Jo Daviess	Warren	Oct. 3 -6
Kane	Geneva	Sept. 12-15
Kane	Elgin	Oct. 7- 4
Kendall	Bristol	Sept. 12-14
Knox	Knoxville	Oct. 3- 6
Lake	Waukegan	Oct. 2- 7
Lawrence	Lawrenceville	Oct. 4- 7
Livingston	Pontiac	Sept. 19-22
Livingston	Fairbury	Sept. 12-15
Logan	Atlanta	Aug. 29-Sept. 2
Macon	Decatur	Aug. 29-Sept. 1
Macoupin	Carlinville	Sept. 19-22
Marion	Salem	Sept. 12-14
Marion	Centralia	Sept. 19
Marshall	Wenona	Sept. 25-29
Mason	Havana	Sept. 26-29
Massac	Metropolis	Sept. 26-29
McDonough	Macomb	Sept. 4- 9
McHenry	Woodstock	Sept. 26-29
McLean	Bloomington	Sept. 5- 8
Menard	Petersburg	Aug. 29-Sept. 1
Mercer	Aledo	Sept. 18-21
Montgomery	Hillsboro	Sept. 26-29
Montgomery	Litchfield	Sept. 19-23
Moultrie	Sullivan	Sept. 19-22
Ogle	Rochelle	Sept. 20-22
Peoria	Peoria	Sept. 12-15
Peoria	Pinckneyville	Oct. 4- 6
Pike	Pittsfield	Sept. 26-29
Pope	Golconda	Oct. 4- 7
Putnam	Hennepin	Sept. 19-21
Randolph	Sparta	Sept. 26-29
Randolph	Chester	Oct. 17-20
Rock Island	Rock Island	Aug. 28-Sept. 1
Sangamon	Springfield	Sept. 18-22
Schuyler	Rushville	Oct. 3- 6
Shelby	Shelbyville	Sept. 26-29
Stark	Toulon	Sept. 26-29
St. Clair	Belleville	Sept. 12-15
Stephenson	Freeport	Sept. 18-23
Union	Jonesboro	Sept. 12-15
Vermillion	Catlin	Sept. 26-29
Vermillion	Hoopeston	Sept. 12-16
Vermillion	Danville	Sept. 19-22
Wabash	Mt. Carmel	Sept. 25-29
Warren	Monmouth	Sept. 12-15
Whiteside	Sterling	Sept. 12-15
Whiteside	Morrison	Sept. 12-15
Williamson	Marion	Oct. 3- 6
Winnebago	Rockford	Sept. 12-15

IOWA.

Adair	Greenfield	Sept. 27-30
Audubon	Exira	Oct. 3- 5
Black Hawk	Waterloo	Sept. 27-29
Buchanan	Independence	Oct. 3- 5
Cass	Atlantic	Sept. 5- 7
Cedar	Tipton	Sept. 12-14
Cherokee	Cherokee	Sept. 6- 8
Chickasaw	New Hampton	Sept. 27-29
Clarke	Osceola	Sept. 27-29
Clayton	McGregor	Sept. 27-29
Davis	Bloomfield	Oct. 4- 6
Decatur	Leon	Oct. 4- 6
Delaware	Manchester	Sept. 26-29
Des Moines	Burlington	Sept. 19-22
Dubuque	Dubuque	Sept. 4- 8
Emmet	Estherville	Sept. 12-13
Floyd	Charles City	Sept. 28-30
Greene	Jefferson	Sept. 13-15
Grundy	Grundy Center	Sept. 13-15
Harrison	Little Sioux	Oct. 4- 6
Henry	Mt. Pleasant	Sept. 5- 8
Howard	Cresco	Sept. 26-28
Jackson	Maquoketa	Sept. 26-29
Johnson	Iowa City	Sept. 26-29
Jones	Monticello	Aug. 29-Sept. 4
Keokuk	Sigourney	Sept. 26-29
Kossuth	Algona	Sept. 28-29
Louisa	Wapello	Sept. 26-29
Lucas	Chariton	Sept. 19-21
Lyon	Rock Rapids	Oct. 4- 6
Madison	Winterset	Aug. 29-Sept. 1
Mahaska	Oskaloosa	Aug. 29-Sept. 1
Marion	Knoxville	Sept. 26-28
Marshall	Marshalltown	Sept. 6- 8
Mills	Glenwood	Sept. 5- 8
Mitchell	Osage	Sept. 28-30
Monroe	Albia	Sept. 12-14
Muscatine	Muscatine	Sept. 26-29
Page	Clarinda	Oct. 3- 7
Plymouth	Le Mars	Sept. 20-22
Polk	Des Moines	Sept. 5- 8
Poweshiek	Brooklyn	Sept. 21-23
Ringgold	Mt. Ayr	Sept. 28-30
Scott	Davenport	Sept. 4- 8
Story	Nevada	Sept. 27-29
Union	Afton	Oct. 4- 6
Union District	West Liberty	Sept. 19-22
Union Cedar	Mechanicsville	Sept. 19-22
Van Buren	Keosauqua	Sept. 19-22
Wapello	Ottumwa	Sept. 19-21
Winneshiek	Hesper	Sept. 19-21
Woodbury	Sioux City	Sept. 19-23

MISSOURI.

Adair	Kirksville	Oct. 4- 8
Boone	Columbia	Sept. 5- 9
Callaway	Fulton	Aug. 29-Sept. 2
Greene	Springfield	Sept. 5- 6
Howard	Roanoke	Aug. 29-Sept. 2
Jackson	Kansas City	Sept. 18-24
Lewis	La Grange	Sept. 12-15
Mississippi	Charleston	Sept. 26-30
Montgomery	Montgomery City	Sept. 5-10
Pike	Louisiana	Sept. 19-23
Platte	Platte City	Sept. 5-10
Saline	Marshall	Sept. 5- 9
Saline	Miami	Aug. 29-Sept. 2

KENTUCKY.

Bourbon	Paris	Sept. 5- 9
Fayette	Lexington	Sept. 12-17
Franklin	Frankfort	Sept. 19-23
Nelson	Bardstown	Sept. 5-10

MISSISSIPPI.

State Springs Grange	State Springs	Oct. 26

TENNESSEE.

Washington	Jonesboro	Oct. 4- 6

THE

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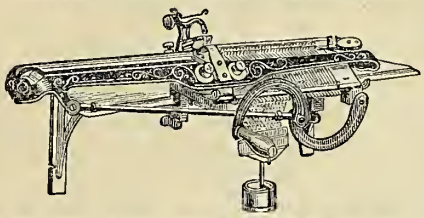

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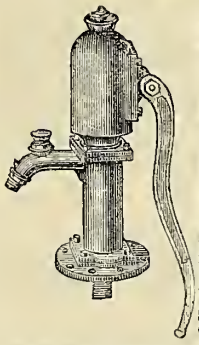

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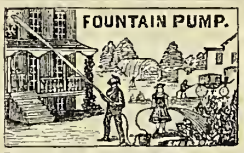

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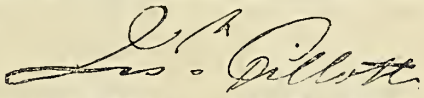

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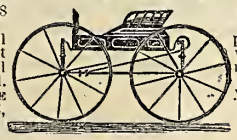

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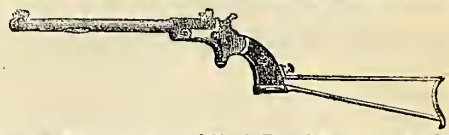

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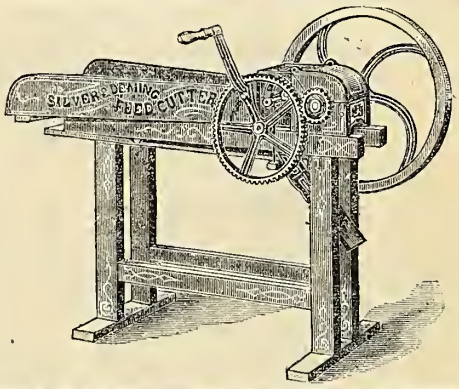

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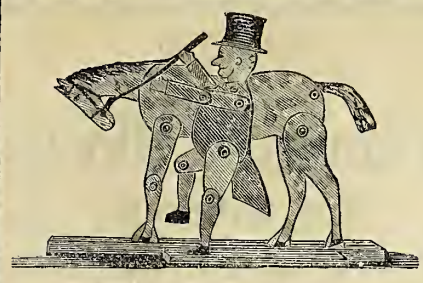
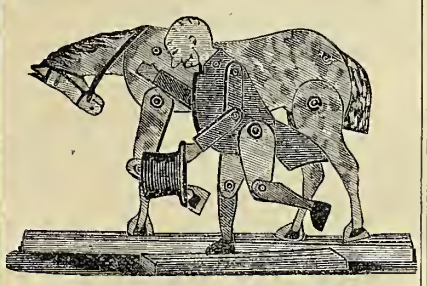
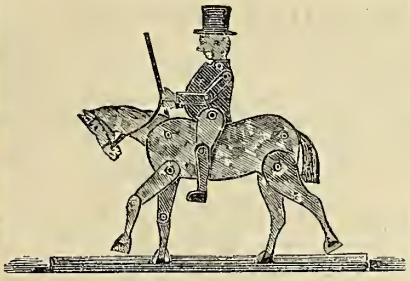


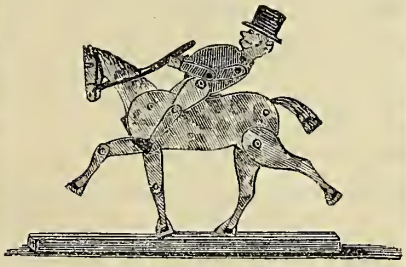
John Gilpin at his horse's side
Seized fast the flowing mane,
1 *And up he got in haste to ride,*
But soon came down again.



For saddle-tree scarce reached had he,
His journey to begin,
2 *When turning round his head he saw*
Three customers come in.



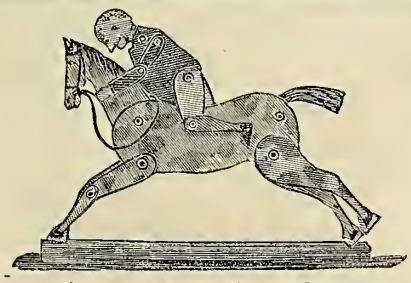
Now see him mounted once again,
Upon his nimble steed,
3 *Full slowly pacing o'er the stones.*
With caution and good heed.



But finding soon a smoother road,
Beneath his well-shod feet,
4 *The snorting beast began to trot,*
Which galled him in his seat.

So stooping down, as needs he must
Who can not sit upright,
5 *He grasped the mane with both his hands,*
And eke with all his might.

Away went Gilpin, neck or naught;
Away went hat and wig;
6 *He little dreamt, when he set out,*
Of running such a rig.



And now as he went bowing down,
His reeking head full low,
7 *The bottles twain behind his back*
Were shattered at a blow.

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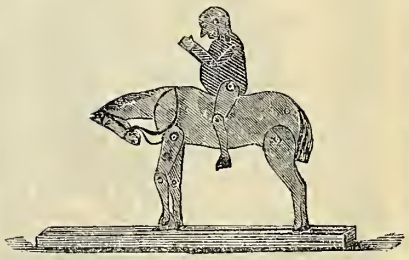
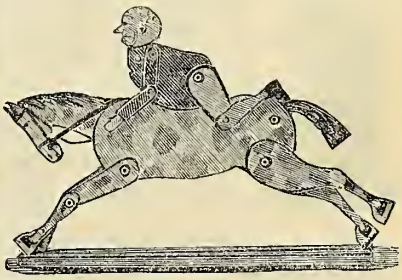
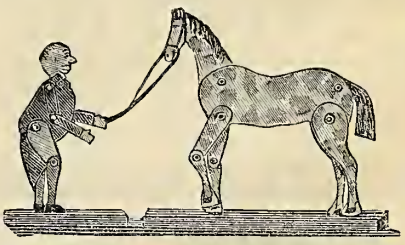


So, turning to his horse he said,
I am in haste to dine;
9 *'Twas for your pleasure you came here,*
You shall go back for mine.

Whereat his horse did snort, as he
Had heard a lion roar,
10 *And gallop'd off with all his might,*
As he had done before.



Away went Gilpin, and away
Went Gilpin's hat and wig;
11 *He lost them sooner than the first,*
For, why?—they were too big.



And so he did, and won it too,
For he got first to town—
12 *Nor stopped till where he had got up*
He did again get down.

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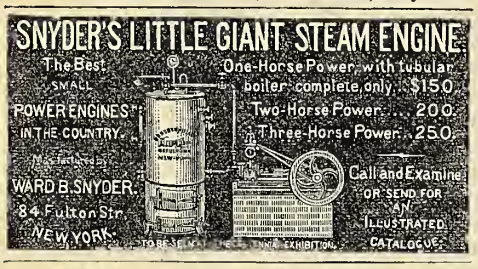

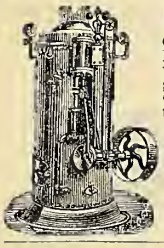

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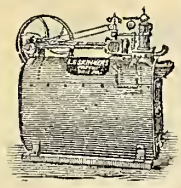

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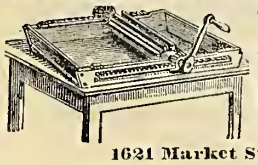

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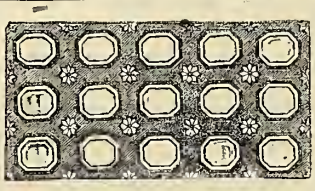

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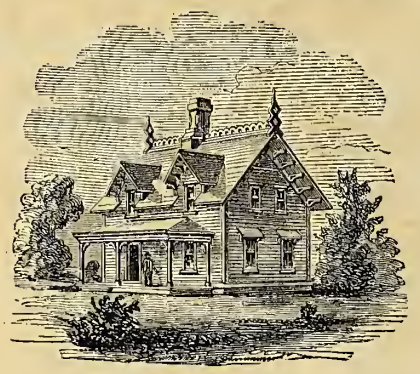

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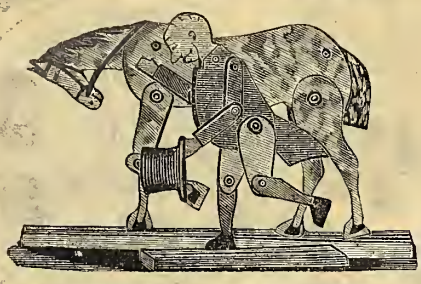

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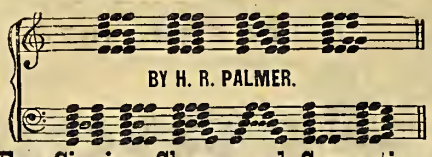

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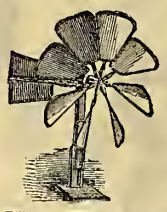

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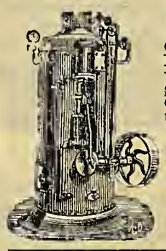

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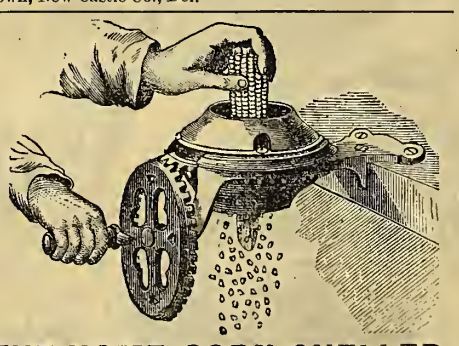

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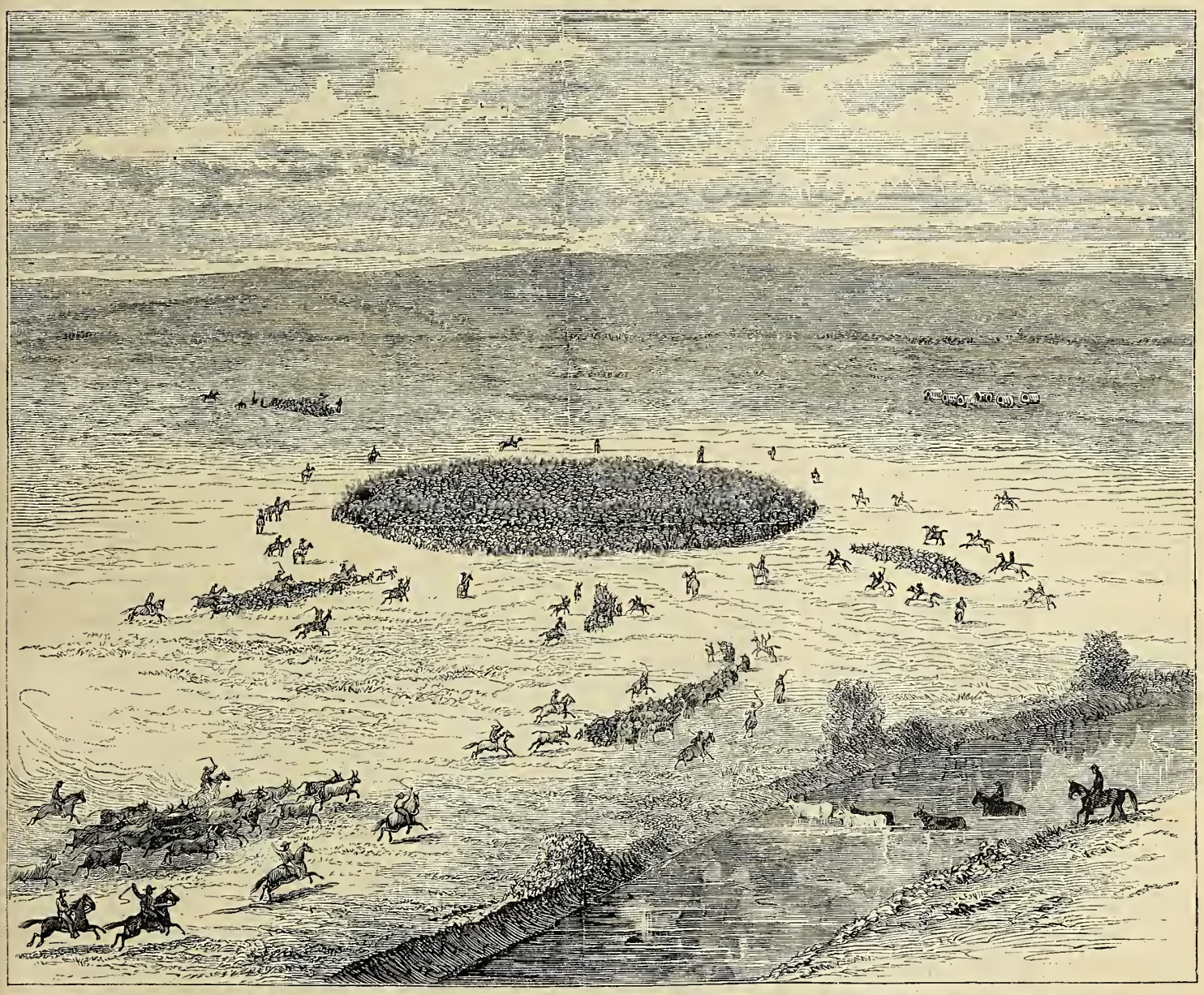

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Calendar for October.

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		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	S	5 57	5 42	3 56	5 56	5 43	3 57	5 56	5 43	3 59
2	M	5 58	5 40	5 3	5 57	5 41	5 3	5 57	5 41	5 3
3	T	5 59	5 39	rises	5 58	5 40	rises	5 58	5 40	rises
4	W	6 1	5 37	5 57	6 0	5 38	6 1	5 59	5 38	6 4
5	T	6 2	5 36	6 26	6 1	5 37	6 31	6 0	5 37	6 36
6	F	6 3	5 34	7 4	6 2	5 35	7 10	6 1	5 35	7 16
7	S	6 4	5 32	7 49	6 3	5 33	7 56	6 2	5 31	8 4
8	S	6 5	5 31	8 46	6 4	5 32	8 56	6 3	5 32	9 2
9	M	6 6	5 29	9 54	6 5	5 30	10 1	6 4	5 31	10 8
10	T	6 8	5 27	11 12	6 6	5 28	11 18	6 5	5 29	11 24
11	W	6 9	5 26	morn	6 7	5 27	morn	6 6	5 28	morn
12	T	6 10	5 24	0 28	6 8	5 25	0 32	6 7	5 26	0 33
13	F	6 11	5 22	1 44	6 9	5 24	1 47	6 8	5 25	1 50
14	S	6 12	5 21	2 55	6 10	5 22	2 57	6 9	5 23	2 58
15	S	6 13	5 19	4 7	6 11	5 21	4 7	6 10	5 22	4 7
16	M	6 14	5 17	5 17	6 12	5 19	5 15	6 11	5 20	5 14
17	T	6 15	5 15	sets	6 13	5 17	sets	6 12	5 19	sets.
18	W	6 17	5 14	5 35	6 15	5 16	5 40	6 13	5 18	5 45
19	T	6 18	5 12	6 7	6 16	5 14	6 13	6 14	5 16	6 19
20	F	6 19	5 11	6 41	6 17	5 13	6 49	6 15	5 15	6 55
21	S	6 20	5 9	7 27	6 18	5 12	7 35	6 16	5 14	7 43
22	S	6 21	5 8	8 21	6 19	5 11	8 28	6 17	5 13	8 36
23	M	6 22	5 6	9 31	6 20	5 9	9 37	6 18	5 11	9 44
24	T	6 23	5 5	10 27	6 21	5 8	10 33	6 19	5 10	10 39
25	W	6 25	5 3	11 33	6 22	5 6	11 37	6 20	5 9	11 42
26	T	6 26	5 2	morn	6 23	5 5	morn	6 21	5 8	morn
27	F	6 27	5 0	0 37	6 24	5 3	0 40	6 22	5 6	0 43
28	S	6 28	4 59	1 40	6 25	5 2	1 42	6 23	5 5	1 44
29	S	6 29	4 57	2 44	6 26	5 0	2 45	6 24	5 3	2 45
30	M	6 30	4 55	3 51	6 27	4 59	3 51	6 25	5 2	3 50
31	T	6 32	4 54	4 57	6 29	4 58	4 55	6 26	5 1	4 53

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
Full M'n	3	6 12 mo.	6 0 mo.	5 48 mo	5 36 mo.	5 6 mo.
3d Quart.	10	5 36 mo.	5 24 mo.	5 12 mo	5 0 mo.	4 30 mo.
New M'n	17	5 13 mo.	5 1 mo.	4 49 mo	4 37 mo.	4 7 mo.
1st Quart	25	3 10 mo.	2 58 mo.	2 46 mo	2 34 mo.	2 4 mo.

AMERICAN AGRICULTURIST.

NEW YORK, OCTOBER, 1876.

This month and the next are really two of the busiest months of the year. We are too apt to forget this, and to let the pleasant October days lure us to rest or pleasure seeking. Then come corn-husking and potato digging in the sleet and slush of the first wintry storms. We have never been caught so but once, and never will be so caught again. While anything remains to be done, there should be no "let up"; that which *may* be done, may be left, but that which *must* be done should be done now. There is corn yet to be cut up; potatoes to be dug; apples to be gathered; corn to husk; roots to harvest; stalks to be drawn in and stack; buildings to fix up, and stock to be looked after. The man who will leave any of this work, and go to digging out stone, making fences, wasting time at public sales or other gatherings, or lying around doing nothing, deserves to work in the snow with cold hands and feet, and have no pity. Let everything that must be done be noted down, and finished in order, and the rest be done when the most convenient time comes. But it is by no means lost time to attend the County or State Fair. This ought to be made a special business. And when there, remember it will pay better to study the machines, implements, products, and stock carefully, and attentively, than to run with the crowd to the horse races or the trotting ring. The annual fair should be made a business matter; every farmer, his wife, and children should have something to exhibit there, and should compare and judge for themselves all other exhibits. If no prize is gained, there should be no disappointment, vexation, or jealousy, but a determination to improve upon the effort next year, and if possible then to succeed.

Hints about Work.

Winter Grain, may yet be sown; on good warm soils wheat may succeed sown as late as the end of the month, and rye may be sown as late as early in November. Double the usual quantity of seed should be sown, to ensure a good growth. We have had an excellent and heavy growth of rye to cut in April for soiling, from a field sown in November with 5 bushels to the acre.

Top-Dressing the knolls or poorer parts of the newly sown wheat fields, will be found useful. A thin coating of straw even, has been found of great service, and has helped the crop wonderfully in some cases. For this purpose any coarse manure or straw may be used. Marsh hay or buckwheat straw will be serviceable, as, except when manure is used, the shelter and protection is what benefits the crop. Where the wheat has come up thin and poor on worn lands, 150 lbs. of the best guano, or 100 lbs. of nitrate of soda, per acre, will be beneficial. It should be used early to do the most good.

Water Furrows from low spots should be made at once, to carry off the water which will gather by and by. When these spots are flooded and the soil is wet, it will be too late to do this work, as the trampling of the ground will do more mischief than the water. This *should* be done at once.

Corn Husking.—The present season corn may be husked earlier than usual, and there need be none left in the field by the end of the month. As there are many things to be done during fine weather, it will generally be best to let out this job by the bushel. In this case keep an eye on the huskers, that the work may be done cleanly and no small ears left on the stalks. Large ears measure up more quickly than small ones, and are as easily husked, hence small ears are sometimes not husked. Have two baskets in the field, one for small ears, soft corn, and nubbins, and the other for large sound ears, which should be cribbed by themselves. The rest should be boiled for the pigs, or ground with some oats and bran for feed for cows, but never cribbed with good corn.

Seed Corn should be selected now for next season. Large, sound ears, filled to the tips, are preferable to smaller ones, although two may have grown upon one stalk. We would rather have one good ear upon each stalk, than two small ones upon half the crop, and one small one upon the rest. One large good ear upon a stalk, will yield over 200 bushels of ears per acre, and that ought to satisfy any man. The selected ears should not be husked, but the husks turned back and braided together, so as to make a bunch of 20 or 30 ears. These should be hung up in a dry safe place.

Corn Fodder.—Especial attention has recently been given to corn-fodder in the *American Agriculturist*. What has been said, and the contrivances that have been described should be studied. There will be a scarcity of fodder in many places in the East, and economy should be used in saving and feeding the stalks. They should be put under cover if possible, as they are rarely stacked so as to keep them dry. Mouldy stalks are often the cause of sickness amongst cattle, which is charged to "horn ail," or some other imaginary or obscure disease. Throw out all smutty stalks and burn them. They are not wholesome food, and the scattered smut will be very apt to infest the crops another year.

Potatoes.—We gather potatoes into a temporary pit, and cover the heap with a quantity of the stalks before we leave the field at night. We think this safest and best. They are not touched by a light frost that might occur, nor scalded by the noon sun. As soon as they are dry, gather into heaps of 40 or 50 bushels, and cover, when they will be safe until heavy frosts come, when they should be pitted, or stored in a dry cellar. It is best to dig only in dry weather. Potatoes are high now, on account of the ravages of the potato beetle and the dry weather, in some sections. But on the whole the crop is large, and prices *may* not keep up when the supply becomes diffused and equalized. This may be worth considering by those who can dig their crop early.

The Potato Fungus.—It is now known that the spores of the fungus which causes the potato disease, remain in the stalks or tubers during the winter. Where there is any disease, then it would be safe to burn the stalks, and pick out every diseased tuber to be boiled and fed to pigs or chickens. If this is done generally, the potato disease will probably never become very serious in this country. We have seen many diseased potatoes this season.

Live Stock.—With the new outlet for beef and mutton to the European markets, it is not probable that feeding good beeves will be unprofitable for some time to come. But none but the best stock

is suitable for shipment. It will be wise then to weed out all poor stock which costs as much to keep as the good, and keep only the best. Then these should be kept in the best manner. Just now is a good time to study over this matter and lay plans for the future. Good grades of all sorts of stock are without doubt the best kind of animals to have on any ordinary farm.

Cows.—As the feed out of doors falls off, something must be done for the cows. The leaves of root crops, or some roots, will be useful to keep up the flow of milk with cows that are still milking. But unless a special business is made of winter dairying, it will be well to have the cows dried off before the cold weather arrives. Frozen half-decayed green food is not healthful, and makes poor milk. It would be better to put the cows upon dry feed at once, than feed waste rubbish to them. Cows forward in calf should be kept in fairly good condition, and no more, for safety.

Calves and Yearlings.—Nothing pays so well as to keep young stock growing all the time. Good feed and good care are sure of a satisfactory reward. And now is the time to keep a sharp eye on the young animals and treat them generously.

Sheep.—Wool is low, but good mutton sheep still pay a good profit. The business of raising early lambs is likely to be always profitable. It is only where wool is the principal object that sheep keepers have reason to complain, and they even would be unwise to throw away their flocks because of a temporary depression in wool. It would be better to weed out the poor ewes and half-bred rams, procure full-blood rams, and grade up the flock. Then it will not only be easier to get through the hard times, but when the turn comes, as come it will, the profit will be the greater. See hints for last month.

Fall Plowing.—While hand-work presses, it will be wise to hire extra help to keep the teams at work plowing stubbles, drawing out and spreading manure on the sod intended for corn, hauling swamp muck, and doing other necessary work.

Labor can be procured cheaply now, and it is possible cheaper than for several years to come. Improvements that need to be made, drains, clearings, etc., may now be done at reasonable cost, and if any idle hands are around, they should be set to work as far as possible. In hiring men, give the preference to near-by residents rather than wanderers. It is to the farmers interest to encourage a steady supply of respectable laborers around him.

Roads.—Before the fall rains occur, roads should be repaired, holes should be filled up, hollows leveled, and what is most important of all, the drains should be cleared and put in good order. The surface of the road should be made smooth and sufficiently rounding to turn the water into the side drains, and these should not have so much declivity as to become washed by the current.

Wagons and other vehicles.—While wagons and carts are dry, they should be painted, or if that is inconvenient at this season, they should be put under cover when not in use, until they can be painted. A carriage should not be kept so near a stable that the pungent fumes of ammonia can reach the varnish. These deaden the varnish, and in time cause it to peel off; then the carriage builder is blamed for that for which he is not responsible.

Fuel.—The winter's fuel should now be laid in. Coal should be hauled and stored, and wood cut and split, and piled ready for hauling. Wood cut now, if split fine, will dry thoroughly by Christmas.

Work in the Horticultural Departments.

After the harvest is over, and the late crops of roots stored, there will still remain the work of preparing the ground for next year's crop. The severe drouth of the past season ought to be a warning to horticulturists to underdrain their land, and to make preparations for irrigation where it is possible. The first outlay for irrigating will be considerable, but the almost absolute certainty of good crops every season will make it a profitable investment. There should also be arrangements for storing in a convenient place all drainage from the house, waste water from the roofs of buildings, and all chamber slops and liquid manure; these, if applied to the small fruits, vegetables, grass, etc., will prove very valuable, and utilize what would otherwise prove a nuisance. The storing of roots for winter must not be done before the weather becomes moderately cool, else there will be danger of decay. A root cellar, separate from that of the house, should be provided for vegetables, to avoid the bad odors, if not danger of disease, which may come from vegetables stored in the house cellar.

Orchard and Nursery.

In all localities where the autumns are long and mild, it is decidedly better to plant trees, except stone fruits, in the fall. The soil is in better condition, and the work can be more thoroughly done than in the uncertain weather of spring. The trees should be set as soon as the free falling of the leaves shows that their duties are over; if set soon, the trees will become well established, or "get a good hold of the soil," as gardeners say, before winter sets in. Even if spring-planting is preferred, it is better to procure trees now and heel them in, to be in readiness for setting next spring; transportation is much safer at this season, and this plan will save much anxiety and hurry. A mound of earth a foot high, raised around each tree before the ground freezes, will serve better than a stake, and help protect it from mice. Prepare the land for spring planting.

Heeling-in.—There is a wrong and a right way with this. If a bundle of trees is dumped into a hole, with some earth thrown carelessly over the roots, probably the majority will be found dead in the spring. The right way is to open a wide trench 12 or 18 inches deep, place in the trees singly at an angle of 45° or more, and cover the roots of each with mellow soil, taking care to fill in around completely, leaving no spaces, and finish by banking up well, and provide a channel for the water to run off. The trees should lean towards the south, so that the branches will shade the trunks; if mice are troublesome, it is better to stand the trees upright, and bank the earth all around them. When heeling-in is well done, the trees will pass the winter as safely as if in the nursery, and they are at hand whenever planting can be done.

Seeds.—Prepare beds for sowing seeds of such fruit and ornamental trees as require to be sown at once, as many require the action of the frost to insure their germination. Seedlings from seeds sown last spring, may be taken up and heeled-in, to prevent injury from the heaving of the soil, or be well mulched with leaves.

Nursery Rows may be manured by opening a furrow between them, into which well rotted manure is put and covered. Turn light furrows towards the rows, to throw the water away from them.

Harvest the late apples and pears, and barrel them, but do not put them in the cellar until the weather becomes cold. This year much of the fruit must be examined and assorted before sending to market.

Drying of Fruits should be continued; where there is no drying apparatus, arrange racks near the kitchen stove to use in damp weather.

Shade Trees.—Most varieties of shade trees, except Evergreens, may be set out now, for the reasons given for fall-planting fruit trees. Don't forget to plant a "Centennial" tree.

Manure.—People are slowly learning that fruit can not be taken from the land year after year without making a return, and that unless the orchard is manured, it in time becomes nearly useless. Stable manure, ashes, lime, or bones, are all valuable, and may be applied now or in spring.

Fruit Garden.

The late varieties of pears, and grapes, and the quinces having been harvested, the main work now is to prepare for the next season's crop.

Pears.—Store in a cool room on shelves or in shallow boxes, not exposed to light, and consume or market as they ripen. The late sorts may be treated like winter apples; when they begin to soften bring them into a warmer room to finish.

Grapes.—Only a few varieties keep well, and are best kept by packing in 5-lb. boxes, after they have been picked a few days; keep at an uniform low temperature. After the fruit is gathered, the vines should be pruned before cold weather, and tender kinds laid down and covered with earth.

Strawberries.—If cultivated in rows, the runners should be kept cut off. Apply a dressing of well rotted manure between the rows. Set out plants for new beds in rich soil.

Currants and Gooseberries.—Prune by shortening the new wood, and thinning where too crowded; make cuttings of new wood, and cut into lengths of 6 or 8 in., and set out in rich soil 4 in. apart, with one bud above ground. Pack the earth close around the cuttings.

Blackberries and Raspberries do best when set in the fall, that they may get well established and commence growing early in the spring. Set blackberries in rows 8 ft. apart, and six feet in the rows. Raspberries need not be planted so far apart; four feet each way is a convenient distance.

Kitchen Garden.

Harvesting the remaining crops, and preparing for those of next season, will make this a busy month. Plow or spade all land intended for vegetables this fall, turning under a heavy coating of manure. It is not too late to drain, and it is not probable there will ever be a time when it can be done more cheaply, materials and labor being low.

Asparagus.—When growth has ceased, cut the tops and burn them, unless seeds are wanted for new beds. Apply a heavy dressing of manure, which should lie until spring.

Beans.—Gather all ripe beans. The ripe Limas are much superior to the common field bean for baking. Salt down the late crop of string beans.

Beets.—Pull before the frost has injured their sweetness. Pack those for table use in sand or dry earth, to keep them from shriveling. The tops are excellent for milch cows, and may be kept fresh several weeks at this season, if not put in large heaps.

Cabbages.—Leave the winter sorts in the ground until freezing weather is at hand; then take up and store in a cool cellar or in trenches in the open ground. If stored in the open ground, they may be stood upright in trenches, and covered with straw and boards when really cold weather comes; or they may be set on the surface, roots up, and then be gradually covered with earth as the weather becomes colder.

Cauliflowers.—Set any which are likely to head in a cellar or cold-frame.

Carrots.—Dig and store those for family use in dry earth or sand in the root cellar. Those for feeding out may be put in pits or trenches.

Celery.—Earth up gradually, taking care not to allow the earth to get into the heart of the plants.

Cold-Frames.—These should be made ready at once for the reception of cabbage and other plants which are to be wintered over.

Hot-Beds.—Prepare a supply of light rich earth for next spring, and store where it can be got at readily when needed.

Lettuce.—Sow in cold-frame for wintering over, and a few rows in the open ground; cover with hay or straw before freezing weather.

Onions sown in the fall require to be covered with bog hay or litter, to keep them from being thrown out by frost.

Parsnips.—Dig enough for winter use, and store in earth; the rest leave in the ground until spring.

Rhubarb.—Divide old plants and reset in fresh soil, which has been previously heavily manured. A root or two may be put in the cellar and then started in the hot-bed early.

Salsify and Scorzonera.—Treat same as parsnips.

Spinach.—Sow for spring use in rich soil, and keep that sown last month free from weeds.

Squashes.—Gather before heavy frosts and leave in heaps in the field a few days, covering with the vines at night. Use the greenest specimens first.

Sweet Potatoes.—Dig as soon as the frost has touched the tops of the vines, taking care not to bruise or cut them. Allow them to remain exposed to the sun for a day, and then store in barrels in a room where a warm even temperature can be had.

Tomatoes.—A few plants may be covered with mats, to protect them from the first frosts, and they will continue to bear for some time. Green ones are useful for chopped or other pickles. Make catsup if not already done.

Turnips may be left in the ground until hard frosts, when they must be pulled, topped and stored in bins in the root cellar. The rutabaga sorts are best for family use, especially the White French; pack these in earth, as directed for beets.

Dry Earth.—If a store has not been provided during the dry season, a spot should be harrowed often, to promote rapid drying. Scrape up a supply of dried earth for use in the stables and outbuildings. Store where it will keep quite dry.

Spading.—Spade up all spots which can not be plowed, so that the soil will be made fine by frosts.

Flower Garden and Lawn.

The present is a better time for laying out new walks, drives, and doing any such jobs, than the spring, when work is driving. After the plan is thoroughly made and all needed materials at hand, it will be comparatively easy to carry out the details.

Walks need thorough work, and to have the foundations well laid at the start; at least two feet of earth should be dug out and the space filled with stones to within six inches of the surface; then put on broken stone, and finally finish with good gravel; a walk or drive thus made will last, with the addition of a little gravel occasionally, for a lifetime. Always make the center sufficiently higher than the sides, to allow the water to run off quickly.

Bulbs.—This is the best month for putting in Hyacinths, Tulips and other spring flowering bulbs. Cover with coarse litter before severe weather sets in. Store tender bulbs, such as Tuberoses, Gladioluses, etc., in a dry place, where the mice will not injure them, carefully labelling the named sorts.

Dahlias.—Keep tied to stakes, and if covered cold nights with a cloth or even a paper, their bloom will often be prolonged for some weeks. After the tops are killed by frosts, leave the tubers in the ground for a few days, to ripen; dig on a sunny day, label, and take to the cellar, handling carefully, as they break readily.

Frames and Pits should be in readiness to receive all half hardy plants.

Peonies.—The best time to set these is in the fall, when they are in a state of rest; divide and reset in good garden soil.

Cannas should be taken up before the leaves are killed by frost and stored in a shed where they can dry for a week or so; finally store them where frost and dampness cannot injure them; a good place is under the benches in a greenhouse.

Hardy Herbaceous Perennials.—The fall is the best time to divide and re-set most of these, as many start so early in the spring that they cannot then be moved with safety. Hardy herbaceous perennials should, as a general thing, be moved and divided once in three years, to keep them at their best. When left longer, the roots get matted and the soil around them exhausted.

Seeds.—Sow seeds of shrubs and perennials in boxes, which may be set in cold frames.

Clematis may be raised from seeds which should be sown at once; if they fail to start next spring, they will be quite sure to grow the following one. Many very handsome varieties can be raised from seeds of good named sorts. Some native species are worth trying.

Bedding Plants.—Make cuttings of all to be saved over winter, as it is seldom worth the trouble to keep old plants, when new ones can be made so readily.

Greenhouse and Window Plants.

Everything should now be ready, so that there will be no delay in removing tender plants to the house or greenhouse whenever the weather shall render it necessary. The heating apparatus should be in order, else many plants might be lost by frost. Do all needed glazing and make everything tight.

Annuals.—Sow seeds of annuals for winter flowering now, and keep in a moderately cool place, so that the plants will be stocky and healthy.

Forcing Plants.—Where shrubs and herbaceous plants are forced for flowers, they should be taken up now and potted or planted in the cold frame or cellar, and then be brought into heat as required.

Insects.—Before bringing a plant into the greenhouse, see that those left there are free from insects, and then that all that are taken in are first thoroughly examined, and all insects removed.

Climbers.—Tie up climbers to the rafters or wires, and cut back the too rampant growers.

Bulbs.—Pot and put in a dark place all which are to be grown for winter flowering. After they have formed roots they must be brought into the greenhouse from time to time, as wanted.

Hanging Baskets.—Re-stock with such plants as are fitted for the purpose and let them stand a few days in the shade, until they become established, when they can be hung in the house or greenhouse.

Ferneries.—Remove the old plants, keeping only such as are worth saving, and plant ferns, selaginellas, and such as require a moist atmosphere. The ferns from the woods seldom do well in a case, as the fronds or leaves of most kinds die down to the ground on the approach of winter.

Window Gardening.—Plants that have been turned out into the borders, or those that have been plunged, should be taken up before cool nights check them too much, and placed on a veranda or other partially protected place. In potting, cut back all rampant growth. Observe the directions as to insects given for plants to be taken into the greenhouse—indeed nearly all in relation to the greenhouse is applicable to the window garden.

Commercial Matters—Market Prices.

Gold has been up to 111⅞, and down to 109⅝, closing Sep. 12, at 110, as against 111½ on Aug. 12, and 111⅞ on July 12... With advices from Europe, reporting a less satisfactory general result from the foreign harvests, than had been anticipated, and toward the close boisterous weather, reflected in the foreign markets, in the more confident demand for supplies and the firmer range of values,—our Breadstuff markets have been, as a rule, quoted stronger, especially toward the close, on a livelier business, in good part for export. Flour has been more freely dealt in and has advanced. Wheat has been in good request, but the meagre supplies available have been against active operations. Quite liberal purchases have been reported of new crop winter, to arrive, mainly of new crop amber and white Michigan, which closed more firmly. Corn fluctuated frequently, but closed in favor of sellers, on a brisk trade, chiefly for export. Rye has been more inquired for at a sharp rise in prices. New crop Western Rye, to arrive, has been quite freely purchased for shipment to Germany. Barley and Malt have been offered with reserve and have been quoted higher, but quiet. A free movement has been reported in Oats, value of which also improved....Provisions have been quite freely dealt in; hog products have been much lower; Butter, Cheese, and Eggs, dearer....Wool has met with a much readier sale to the manufacturing interest, and prices of desirable lots of domestic product have advanced decidedly, closing strong. ..Cotton has been quoted lower, on a moderately active movement.... Tobacco has been in better request, for home use and export, at firm rates....Hay, Straw, Hops, and Naval Stores have been in fair demand....Petroleum has advanced materially, on reduced offering and an increased call for supplies from nearly all sources of inquiry.....Grass seeds have been in some demand, but at reduced figures. Timothy closed here at $1.70@$2.00; rough Flax, $1.43@$1.44; new Clover nominal at 10c. bid, and up to 15c. asked. New Clover has been sold at Philadelphia down to 10c. per lb....Ocean grain freights have been fairly active, closing strong....Grain rates by steam to Liverpool, closed on the 12th Sep. at 8¼@8¾*d*; to Glasgow at 7¾@8¼*d*; to London at 8¼*d*; to Liverpool, by sail, at 7½*d*; London, by sail, at 7½@8*d*. per bushel. Provisions by steam to Liverpool, 40*s*.@55*s*. per ton; Cotton at 5/16@⅜*d*. ℔ lb. Grain tonnage for Cork and orders, at 5*s*.10½*d*.@6*s*. per quarter. Grain rates from San Francisco to Liverpool, quoted at 55@65*s*.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Sept. 12th, 1876, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th	294,000	1,617,000	4,117,000	221,000	31,000	693,000
26 d's *last* m'th	305,000	2,451,000	2,060,100	112,000	65,000	1,015,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th	431,000	2,302,000	3,349,000	253,000	16,500	1,214,000
26 d's *last* m'th	412,000	2,634,000	2,104,000	39,000	——	1,104,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 1876..	294,000	1,617,000	4,117,000	221,000	31,000	693,000
28 days 1875..	314,000	4,913,500	3,918,000	29,000	41,000	1,061,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 1876..	431,000	2,302,000	3,349,000	253,000	16,500	1,214,000
28 days 1875..	378,000	5,774,000	4,163,000	19,000	36,000	1,973,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Sept. 11, 1876..	2,532,911	935,136	60,281	52,801	889,136	445,316
Aug. 7, 1876..	2,831,299	901,557	94,960	53,914	1,232,895	434,208
May 8, 1876..	1,563,826	172,090	16,365	33,501	437,337	450,643
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	766,282	436,942
Jan. 10, 1876..	5,802,293	663,982	100,711	325,191	1,080,300	307,433
Dec. 7, 1875..	5,878,036	816,962	99,908	305,961	1,252,005	258,364
May 11, 1875..	969,804	1,542,924	16,124	16,537	515,209	229,655

4. *Exports from New York. Jan. 1, to Sept. 8.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1876.	1,337,000	18,679,000	11,277,000	682,000	28,100	453,260	460,200
1875.	1,382,727	18,140,017	8,387,632	152,333	225	88,472	235,865
1874.	1,529,415	24,462,895	15,829,600	553,050	3,320	86,696	272,105
1873.	966,067	12,166,224	9,813,745	551,093	19,226	26,591	91,270

CURRENT WHOLESALE PRICES.

	Aug. 14.	Sept. 12.
PRICE OF GOLD	111 1-32	110
FLOUR—Super to Extra State	$3 65 @ 5 25	$3 85 @ 5 35
Super to Extra Southern	3 65 @ 8 50	3 85 @ 8 50
Extra Western	4 40 @ 9 25	4 60 @ 9 75
Extra Genesee	5 25 @ 6 50	5 35 @ 6 75
Superfine Western	3 65 @ 4 35	3 85 @ 4 50
RYE FLOUR	2 75 @ 5 15	2 00 @ 5 15
CORN-MEAL	2 60 @ 3 25	2 60 @ 3 30
WHEAT—All kinds of White	1 20 @ 1 35	1 18 @ 1 33
All kinds of Red and Amber	70 @ 1 30	90 @ 1 28
CORN—Yellow	57 @ 61	56 @ 58
Mixed	48 @ 58½	50 @ 57½
White	56 @ 63	54 @ 58
OATS—Western	26 @ 45	37 @ 48
State	39 @ 48	42 @ 50
RYE	60 @ 76	68 @ 90
BARLEY	Nominal.	85 @ 1 10
HAY—Bale, ℔ 100 lbs	55 @ 95	60 @ 1 00
STRAW, ℔ 100 lbs	45 @ 95	50 @ 95
COTTON—Middlings, ℔ lb	12⅜@ 12½	11⅝@ 11¾
HOPS—Crop of 1876, ℔ lb	— @ 30	20 @ 30
" old, ℔ lb	4 @ 20	4 @ 20
FEATHERS—Live Geese, ℔ lb	30 @ 60	30 @ 60
SEED—Clover, ℔ lb	16 @ 16½	10 @ 11
Timothy, ℔ bushel	2 75 @ 2 90	1 70 @ 2 00
Flax, ℔ bushel	1 40 @ 1 42½	1 43 @ 1 44
SUGAR—Refi'g & Grocery ℔ lb	7⅞@ 10¼	8 @ 10¼
MOLASSES, Cuba, ℔ gal	30 @ 42	30 @ 40
New Orleans, new crop, ℔ gal	47½@ 60	45 @ 60
COFFEE—Rio (Gold)	14¾@ 17¾	15½@ 18¾
TOBACCO, Kentucky, &c., ℔ lb	6 @ 25	5 @ 25
Seed Leaf, ℔ lb	5 @ 25	5 @ 25
WOOL—Domestic Fleece, ℔ lb	18 @ 40	20 @ 45
Domestic, pulled, ℔ lb	16 @ 35	17 @ 38
California, clip	10 @ 25	12 @ 30
TALLOW, ℔ lb	8¾@ 8⅞	8⅜@ 8⅝
OIL-CAKE—℔ ton	38 00 @39 50	38 50 @ —
PORK—Mess, ℔ barrel	— @19 40	17 50 @17 75
Prime, ℔ barrel	— @ —	15 50 @16 75
BEEF—Plain mess	9 00 @11 00	8 00 @10 00
LARD, in trcs. & bbls. ℔ 100 lb	11 00 @11 15	11 15 @11 25
BUTTER—State, ℔ lb	16 @ 30	18 @ 33
Western, poor to fancy, ℔ lb	14 @ 27	16 @ 30
CHEESE	3 @ 9¾	5 @ 12
BEANS—℔ bushel	50 @ 1 50	75 @ 2 00
PEAS—Canada, in bond, ℔ bu	96 @ 98	95 @ 98
EGGS—Fresh, ℔ dozen	15 @ 20½	20 @ 26
POULTRY—Fowls	12 @ 16	14 @ 19
Turkeys—℔ lb	13 @ 17	15 @ 20
Geese, ℔ pair	1 25 @ 1 75	1 25 @ 2 50
Ducks, ℔ pair	56 @ 1 00	60 @ 1 00
Roosters, ℔ lb	— @ —	8 @ 10
Chickens, dry pick'd lb	16 @ 25	15 @ 22
GROUSE, ℔ pair	— @ —	80 @ 95
SNIPE, per doz	— @ —	1 25 @ 1 50
PARTRIDGE, ℔ doz	— @ —	85 @ 1 00
PLOVER, ℔ doz	— @ —	1 37½@ 1 75
DUCKS, Wild, ℔ pair	— @ —	25 @ 65
WOODCOCK, ℔ pair	75 @ 90	80 @ 90
PIGEONS, wild, ℔ dozen	— @ —	— @ —
" tame, ℔ dozen	1 00 @ 1 25	1 25 @ 1 75
CUCUMBERS, ℔ bbl	— @ —	50 @ 1 00
TURNIPS ℔ bbl	2 00 @ 2 50	1 00 @ 2 50
CABBAGES—℔ 100	5 00 @ 8 00	3 00 @ 8 00
ONIONS—℔ bbl	2 50 @ 3 00	1 25 @ 2 50
POTATOES—℔ bbl	2 00 @ 3 50	1 50 @ 2 75
SWEET POTATOES—℔ bbl	3 00 @ 6 00	2 75 @ 3 75
RADISHES, ℔ 100 bunches	— @ —	50 @ 1 00
LIMA BEANS, ℔ brg	— @ —	75 @ 1 75
STRING BEANS, ℔ bag	— @ —	50 @ 1 00
CAULIFLOWER, ℔ doz	— @ —	75 @ 5 00
BROOM-CORN	3 @ 9	3 @ 9
WATERMELONS, ℔ 100	15 00 @30 00	5 00 @20 00
GREEN PEAS, ℔ bush	1 00 @ 1 15	1 00 @ 1 15
TOMATOES, ℔ bskt	87½@ 1 25	50 @ 1 00
BEETS, ℔ 100 bunches	2 50 @ 3 00	2 00 @ 3 00
EGG PLANTS, ℔ doz	90 @ 1 25	75 @ 1 25
GREEN CORN, ℔ 100	75 @ 1 00	75 @ 1 25
NUTMEG MELONS, ℔ bbl	2 00 @ 2 50	2 00 @ 3 50
APPLES—℔ barrel	75 @ 2 00	75 @ 2 00
SQUASH, ℔ bbl	2 00 @ 3 00	50 @ 1 00
PEARS, ℔ bbl	1 50 @ 5 00	1 75 @10 00
PEACHES, ℔ basket	25 @ 2 00	50 @ 1 75
PLUMS, ℔ bbl	3 00 @ 5 00	5 00 @11 00
GRAPES, ℔ lb	6 @ 9	2 @ 10
WHORTLEBERRIES, ℔ bush	75 @ 1 50	1 50 @ 2 50
MAPLE SUGAR, ℔ lb	— @ —	— @ —
MAPLE SYRUP, ℔ gallon	— @ —	— @ —

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Aug. 21	9,016	58	3,510	25,856	18,786	57,226
Aug. 28	9,999	76	3,564	29,356	17,663	60,658
Sept. 4	8,896	22	3,997	21,412	18,785	56,142
Sept. 11	10,875	76	3,660	30,756	22,889	68,256
Total for 4 Weeks	38,786	232	14,731	110,410	88,123	242,282
do. *for prev. 5 Weeks*	49,347	503	15,861	141,621	100,798	308,140

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	9,696	58	3,682	27,602	22,030
do. do. *last Month*	9,871	100	3,172	28,324	20,159
do. do. *prev's Month*	8,732	58	3,144	23,980	19,898

Beeves.—The business for the past month has been

somewhat changeable, without resulting in any gain, although a better feeling is manifest towards the close of our report. The advance marked in our quotations, has been gained from an improvement in quality, and the absence of the lowest grades, rather than from a higher salable value. A very important element in the market just now, is the increasing shipment of the best cattle to Europe. Three shippers are now in the business, one of whom has 17 steamers fitted up with refrigerators. In 11 months nearly 9,000 cattle have been sent out, and as the foreign market is only limited by the means for successful carriage and our supply, cattle producers should note this new feature of the trade. The market closes with a break in prices on poor grades, Texans selling at 7 @ 8¼c. ℔ lb., on stock estimated at 54 to 56 lbs. dressed per 112 lbs. live weight, against 9c. for the previous week; native steers were sold at 10½c. ℔ 57 lbs. to the cwt., and the large sales at these prices look bad for future business.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Aug. 21.....	6¾@10½c.	7¼@ 9¾c.	9¼c.
Aug. 28.....	7¾@10½c.	7¾@ 9¾c.	9¼c.
Sept. 4.....	7½@10½c.	9 @10¼c.	9½c.
Sept. 11.....	7 @11 c.	7¼@10½c.	9½c.

Cows.—To sell cows has been difficult work until the small receipts of the third week of the month, and advance in beef improved the demand. Prices are only steady at $40 for poor, to $75 for fine, averaging $50 to $65 per head.....**Calves.**—The demand from farmers for good calves for feeding, has helped the market, and prices are firm. One good lot of blooded calves sold at $15 each to a farmer. Veals sold at the close at 7½@9½c. ℔ lb., live weight. Grass calves are in demand to go into the country, at 3½ @ 4½c. ℔ lb. or $6.50 to $11 per head....**Sheep and Lambs** now go together, and many lambs have been purchased by farmers for stockers, at 4c. ℔ lb. This is a bottom price, and being reached, affairs mended. Fat sheep were selling at the close at 5¾c., and of extra at 6c. ℔ lb. live weight, others sold from 5¼ down to 4c. ℔ lb., for very poor lots. The best lambs brought 7c. ℔ lb., Ohio lambs 5¼ @ 5½c. ℔ lb.... **Swine.**—The market has been up and down through the month, closing at 7½ @ 7¾c. for heavy dressed; 8 @ 8¼c. ℔ lb. for medium, and 8¾c. ℔ lb. for light, 160 lbs. and down. Live Ohios of 183 lbs. sold for $6.70 ℔ 100 lbs., and live State hogs brought 6½c. ℔ lb.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton	$56.50
do. do. guaranteed, ℔ ton	56.00
do do. rectified, per ton	61.50
Mapes' Nitrogenized Superphosphate, per ton	45.00@ 50.00
" Plain Superphosphate (mineral), per ton	30.00@ 35.00
" Bone Superphosphate, per ton	40.00@ 45.00
" Prepared Fish Guano, per ton	35.00@ 40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton	40.00
" " Dry ground Fish Guano, ton	45.00
" " Pine Island Guano, per ton	45.00
Fish Guano (crude in barrels), per ton	24.00
Bone Black, per ton	25.00@ 28.00
Bone Flour, per ton	40.00@ 45.00
Rawbones Ground (pure), per ton	38.00@ 40.00
Rough Bones, per ton	22.00@ 25.00
German Potash Salts, (25@35 per cent), per ton	20.00@ 25.00
Gypsum, Nova Scotia, ground, per ton	8.00@ 9.00
" In barrels, per bbl	1.25
Wood Ashes, per bushel	16 c.@18 c.
Nitrate of Potash (95 per cent.), per lb	8½c.@ 9 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2¾c.@ 3¼c.
Nitrate of Soda, per lb	4 c.@ 4½c.
Sulphate of Ammonia (25 per cent.), per lb	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia	$3.00@ $ 4.00

The Centennial—One More Month.

There remains all the glorious month of October and about 10 days in November before the closing of the greatest exhibition the world has ever seen. We hardly know how to say more, than we have already said, to induce all who can possibly manage to do so, to visit this wonderful exhibition. It is really worthy of any sacrifice that one may properly make to compass the means of visiting it. In extent it is overwhelming, in artistic beauty it has been surpassed by European exhibitions, but in instructiveness, in interest for all—no matter what ones tastes, it is very far the greatest "World's Fair," yet held. The American portion would be naturally the strongest in machinery, and it is certain that such a gathering of devices, in which iron, informed by ingenious brains, is made to do the work of hands, was never before known. Such another assemblage of machinery at work (and machine products), as are now congregated in the acres of the Machinery Building, and worked by the miles of shafting all moved by the famed Corliss engine—itself an exhibition—is scarcely possible in any other part of the world, and will not be seen in this country during the life time of most of us. Then there is the farm machinery in the Agricultural Building, equally extensive in its way, and presenting objects for many days study. Then the Main Building will give a careful observer a better idea of the products and manufactures of the whole world, than many get in a journey abroad, and though there is much rubbish in the two immense Art galleries, there is still much that is of great interest. The Horticultural, the Dairy and the Government Buildings have already been noticed; besides there are the Mineral, the Shoe and Leather, the Carriage, the Wagon and many other buildings, which, though called "Annexes," are exhibitions of themselves. One can spend a day satisfactorily in visiting the various State buildings, some of which, like Kansas and Colorado, Arkansas and West Virginia, have each collections of more interest than one often finds at a County or State Fair. The writer, after his fourth visit of from 3 to 10 days each, finds that at each visit the immensity and excellence of of the exhibition grows upon him. While feeling that no one can say that he has thoroughly seen the *whole*, not if he began on the first and staid until the last day, we are sure, that every one who can possibly manage to visit the exhibition, whether for one week or more, or if unable to manage that, gives only three days to it, will feel amply repaid—repaid not only in the instruction he may receive, but in the feeling of pride that he is an American citizen, in the 19th century of the world's history, and at the end of the first century of his country's history. We would repeat that the expense of living in Philadelphia is not large. We know of those who found good board and rooms for $8, or $10 a week, and we have had letters from private individuals offering to furnish lodging, breakfast and 6 o'clock dinner for $1.50 a day. One accustomed to look out for himself in a strange place will have no difficulty in finding comfortable quarters. Go to the exhibition even at some sacrifice—it is an investment that will make large returns.

containing a great variety of Items. including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

Death of Hon. Henry S. Randall, L.L.D.—This gentleman, so thoroughly identified with the wool-interests of the country, and President of the National Wool Growers' Association, died on August 14th, last, at his residence at Cortland, N. Y. He was at one time Secretary of State of New York, and occupied other public positions, and was the author of an excellent Life of Jefferson. He was best known to the agricultural community as an author on sheep husbandry, his works upon the Merinos being standard authorities for that breed. He was for a long time an associate editor of the Rural New Yorker.

☞ Subscribe **this month for all of 1877,** and get **November and December** Numbers FREE. ☜

Silk in Kansas.—Some months ago we noticed a pamphlet on silk culture by Mr. L. S. Crozier, of Silkville, Ks. Mr. C. has recently sent us specimens of the cocoons and silk of his production, showing his success in that branch of industry, and, which interested us still more—specimens of several new varieties of the Mulberry, some of which have remarkably large leaves.

A Very Good Home School for Young Ladies and Girls.—Parents and guardians having Daughters or wards whom they wish to place where they will have all the care and kindness of a judicious and well regulated home, with sound, not fanciful or flimsy education, can find just such advantages by entrusting them to the care of Miss M. Macgregor, of Flushing, N. Y. This is a beautiful village, seven miles east of New York city, with such connections by railway as to give its residents all the advantages, day and evening, of lectures, museums, etc., that are enjoyed by city residents. Having had four children under Miss Macgregor's care at different times, within ten years past, we speak from personal experience and observation, in commending her as one of the best teachers we have ever known. She receives into her house eight or ten pupils who are taught in her day school with others, and out of school hours receive all the kind christian care from herself and her associate, Miss Quinby, that any one can possibly have when away anywhere from their own home. O. J.

Rice's Spring Braces.—In the usual mode of using elliptic (steel) springs on wagons, buggies, and other vehicles, there is a severe lever strain upon their narrow attachments to the axle, and the spring-bar above—especially in going up and down hills, and in starting and stopping, C. L. Rice, of Scranton, Pa., has devised a steel-bar to extend from the rear spring to the reach, which seems to be well adapted to relieve and prevent this strain. It is attached to the spring by a curve, so as not to impede the free perpendicular action of the spring, while it braces it against sudden back or forward movements. It is not expensive. Further particulars may be found in the advertising columns.

Bulletins of the Bussey Institution, in which are recorded the experiments and investigations made at that Department of Harvard University, will not be distributed gratuitously as heretofore. Five "Bulletins," constituting Vol. 1, and containing 25 separate papers have been issued and distributed. That the efficiency of the Institution, as an Experiment Station, may not be impaired by the expenditure of its funds in publishing and distributing future Bulletins gratuitously, it has been determined to issue them at the price of 75 cents per part of 80 to 100 pages. The Bulletin will in future be published by John Allyn, 30 Franklin street, Boston, who will receive subscriptions. The parts already issued can be procured from the publisher for 75 cents each; they contain matter of great value to the scientific farmer and horticulturist, and as the record of original investigations their value will yearly increase.

Grater for Apples and Cider Press.—"J. W. W.," Framingham, Mass.—An excellent grater for apples is one made by the Boomer & Boschert Press Company, of Syracuse, N. Y. A very powerful press is made by the same parties on the principle of the toggle or elbow joint, worked by a screw, by which great pressure is exerted by a comparatively small power.

The Georgia State Horticultural Society.—We have on more than one occasion referred to the activity of the people of Georgia in agriculture and rural matters generally. A recent manifestation of this is seen in the formation of a State Horticultural Society, which held its meeting for organization at Macon, Ga., on Aug. 15th, last. A report of the meeting shows that the most eminent horticulturists of the State were present, and the new society did much to insure its success by electing our friend P. J. Berckmans, of Augusta,

its first President. Mr. B., upon taking the chair, gave an address in which, among other matters, he cited the remarkable adaptability of the State to fruit growing; from the borders of Florida to the high mountains, it presents a wonderful diversity of climate, and allows of the production of northern as well as peculiarly southern fruits, and its capabilities in the way of vegetable and ornamental plants, are equally great. Every horticulturist will join with us in wishing prosperity to the new society.

Rifle Shooting "Counting."—As there is now a good deal of interest in rifle shooting, and the newspapers are full of "scores" made, etc., some of our readers wish us to tell them how the "counting up" is reported, to complete the full information given in our illustrated article last December. There are two kinds of targets generally used, Fig. 1 for 500 to 1,000 yards or more. This has a black center, 36 inches in diameter, though it looks like a small black spot at a distance of 1,000 yards (3,000 feet). Balls hitting this center count **5.** A white circle is around this, 9 inches wide, or 54 inches in diameter, in which shots count **4,** and are called "centers." The inner square is 6 feet each way. Shots in this, outside of the circle, are called "inners," and count **3.** The two wings are 3 feet wide, and 6 feet high. Shots in these count **2,** and are called "outers." There are no **1** counts....The 200-yard target, Fig. 2, is 4 feet wide, and 6 feet high. The black bull's eye, 8 inches in diameter, counts **5.** The circle around it, 26 inches in diameter, called "centers," counts **4.** The next circle, 46 inches in diameter, counts **3,** called "inners." Shots in the target outside of the circles, count **2,** called "outers."

Fig. 1.

Fig. 2.

American Dairying.—A work on American Dairying by L. B. Arnold, Secretary of the American Dairymen's Association, has been published by the Rural Home Company. As might have been expected from the reputation of the author, this book treats of the dairy business in a very practical and plain manner. If the author had omitted the chapter in which he advances some questionable theories of the "Animal odor" of milk and some curious speculations about the relation of "germs" to milk, the book would have been unobjectionable. This, however, is the only portion of the book that is not of practical utility to an American dairyman or woman. Sent from this office by mail for $1.50.

Artificial Mother.—"F. R. Q.," White Plains, N. Y. The artificial mother for young chickens described in the *American Agriculturist* for August is not, so far as we know, made for sale. It is so simple in construction that any one who can use carpenter's tools should be able to make one. Any worker in tin plate can make the heater.

Fine Balsams.—Those who have seen only the common kinds of half-double Balsams,—or "Touch-me-nots," as they used to be called—have no idea of the beauty of some of the improved strains. We thought we had seen quite perfect ones, but Mr. W. S. Allen, of Queens, L. I., recently showed us some that excelled any we had before seen. A white one, particularly, was very large, as full as the most double camellia, and of excellent substance, which makes it very useful for florists' work. Mr. A., who cultivates these Balsams in large quantities for their seed, informs us that the finest flowers so rarely produce seeds, that they are worth a cent a piece at wholesale.

"Signal Service Barometer."—"C. W. G." and several others, The article advertised under this name, is not a "barometer" at all, nor is it anything of the kind used in the U. S. Signal Service. According to the circular it is only the old storm-glass that has been around as long as we can recollect—and that is no brief period. Now that the thing has started up anew, we have made one, and if, after observing it a while, we think advisable, we will give directions, so that those who care to do so, may amuse themselves with it.

The Markrud Wagon Brake.—A committee appointed by the Elmira Farmers' Club has tested the Markrud wagon brake, recently described in the *American Agriculturistt*, and has reported very favorable concerning it.

Coco or Nut-grass.—In response to our inquiry as to the methods of subduing this pest of the southern fields, "F. G. S." writes from Robertson Co., Tex., that sowing the land with cow-peas, *thickly* for two years in succession, will both destroy the "coco," and give a fine crop of cow-pea hay. This remedy is founded upon correct principles, and we do not doubt its success; crowding and smothering an objectionable plant by a useful one is one of the best methods of getting rid of weeds.

A Cranberry Weed.—"A. J. A.," Blackstone, Mass., sends a specimen to be named, of a plant which proves quite troublesome in cranberry meadows. It is known as Swamp-Loosestrife, Swamp Willow-herb, and Slink-weed, the last name on account of its reputation, in some parts of the country, as a cause of abortion in cattle. Its botanical name is *Nesæa verticillata*, a shrub with willow-like leaves in the axils of which are clusters of rose-colored flowers; the slender stems, 2 to 8 feet long, curve over and take root at the tips, after the manner of a black-cap raspberry, and thus spread rapidly, completely occupying the soil to the exclusion of other plants. We should judge that frequent mowing would keep it in subjection.

Screw Stump Pullers.—"A. C.," New Haven, Mo. A screw stump puller is made by Chamberlin & Sons, of Olean, N. Y.

Vergalieu Pear.—"S." writes from Hartford, Conn., that having a Vergalieu or White Doyenne pear tree, upon which the fruit, as in most Eastern localities, became cracked and worthless, he grafted over the tree and changed it into Bartlett. By an oversight a shoot of the original Vergalieu, which, being small, was mistaken for a graft was left. In time this twig became a bearing branch, and now yields an annual crop of perfect Vergalieu pears. Our correspondent thinks that this change for the better, on the part of this Vergalieu branch may be due to fertilizing its flowers with pollen from the healthy Bartletts. We regard the change as due to the new vigor imparted to the old trunk through the influence of the healthy leaves of the Bartlett; that we need not look to the pollen as the cause is shown by the fact that many an old Vergalieu has been restored by pruning and fertilizing, and made to bear good fruit.

Whale Oil Soap.—A Boston subscriber writes to know if this soap used upon vines will stain the faced brick walls. We have no experience meeting the case, but if the rains have free access to the walls we think they would wash them clean. Whale oil soap is dirty stuff. Who can tell if it will be safe to use it?

Thrush in the Feet.—"T. S. C.," Seekonk, Mass. The usual treatment for thrush is to pare away all the lose horn around the frog, and inject into the cracks a strong solution of chloride of zinc, washing out the diseased parts thoroughly. Then fill the crack with some tow, steeped in the solution to prevent dirt from entering the hoof. Where the heels have been cut away too much, use a Goodenough shoe.

Breaking up a Meadow.—"B. Bros.," Linn county, Mo. Meadows after a few years are apt to run to stools, unless some fresh seed is sown upon them every year and a top-dressing of some fertilizer, such as wood ashes, is given. When this has been neglected and the meadow is very "patchy," it would be better to plow it up and re-seed it. If this is not convenient, we would harrow the ground well, and sow some fresh seed at once and give a dressing of wood ashes after the seeding. In the spring, when the ground is still soft, the meadow should be well rolled. A dressing of barn-yard manure—that from horses fed upon grain and hay is generally free from weeds—would be useful once in four or five years.

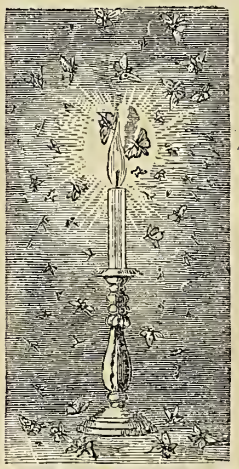
Potash Salts for Wheat.—"W. W," Richmond Co., Va. Potash salts and all other very soluble fertilizers should either be used very early in the fall or in the spring. It would perhaps be safest to use half the quantity to be applied at once and the remainder in the spring. When the winter is mild and the crop is kept in a growing condition all the season, this rule is not intended to apply.

How to Whitewash a Poultry House.—"S. J.," Chatham Center, N. Y., writes, "my way of whitewashing a poultry-house is as follows: first make double the quantity required to do the work in the ordinary way; place the whitewash in a tub or barrel near your hen-house door, then apply the wash with a garden-engine or a hydropult, with a boy to assist, and the house can be done in fifteen minutes."

A Record of Grade Essex Pigs.—"J. W. D.," Jefferson Co., Iowa, sends the following account of the feeding and growth of two litters of grade Essex pigs, by a neighbor, Mr. S. H. Brown. There were 13 pigs experimented with, which came Oct. 28th, 1875. They had plenty of exercise, were fed upon corn and milk, had a comfortable place to sleep in, and plenty of dry bedding. April 18th, '76, they weighed 2,090 lbs—in 35 days from this time, until June 3d, they ate 49 bushels and 38 lbs. of corn, shelled and fed dry, (56 lbs. to the bushel,) and 1½ bushel wheat bran; they also received 4 gallons per day of skimmed milk. June 3d, when 7 mos. and 6 days old, their fasted live weight was 2,744 lbs., or an average of 211 lbs., showing a gain of 654 lbs. They were watered regularly three times a day. The milk was fed morning and evening after the corn. The mothers of the pigs are medium sized, from a Magie sow and a Berkshire boar. The sire is a thorough-bred Essex. On June 3d, one of the heaviest weighed 234 lbs.

Feeding decayed Fruit and Potatoes.—"G. O.," Hamilton, N. Y. If partially rotted apples or potatoes are boiled, they may then be fed to pigs without injury; but not otherwise without danger

Sundry Humbugs.



"A reader" seems to think that we give more attention to the minor swindles than we do to the large ones, and we admit that we have intentionally done so. The small frauds which have for their object the fleecing of their victims of all the way from a post-stamp up to $1 and $5 are much more numerous than those in which the game is played for larger sums, and in the aggregate these 50 cent and $1 humbugs fleece the community out of vastly more than do those in which $100 and $1,000 are involved. These minor cheats appeal largely to young people, and to persons of small means, to whom the loss of a dollar is of greater importance than the loss of the larger sums to those able to invest in them. If one has $100 ready cash to put into the hands of some curb-stone broker on Wall street, of whom he only knows through an advertisement, we do not feel a tithe the regret over his loss that we do over the farmer's boy or clerk in the village store who sends his dollar for some kind of a watch chain "which can not be distinguished from and will wear as good as gold." The possession of large sums implies a certain amount of ability in making the money, or caution in saving it, which make us feel that they who have them should know better than to be caught by sharpers, and feeling that such should less need our warnings, we have given more attention to the other class. Still there are cases in which those who have several hundred dollars to expend in a legitimate way—not in speculation with a view to rapid money-making—who are liable to be defrauded. An example of this is in the

PURCHASE OF BOGUS PIANOS.

Many a farmer or mechanic would gladly make his home pleasant by encouraging his children in a love for music, and many such have looked forward to the time when the money, perhaps the gradual accumulations of several years put aside for the purpose, could be invested in a piano. As he expects to buy but one piano in his lifetime, he intends it shall be a good one, and does not mind paying a good price for a good instrument. He has read about the different makers and what is said of their productions, and makes up his mind that he will have a Steinway, a Chickering, a Steck & Co., or a Decker & Bros., piano, each and all bearing a good reputation. If the intending purchaser goes to the nearest city and buys a piano as he would a barrel of flour, on the credit of the maker's name, it is about an even chance that he will get a bogus instrument, and one which, instead of lasting a lifetime, will be quite useless at the end of a year. A first-class piano is made with almost as much care as a ship is built, and the best materials in every part are put together with the greatest care and skill. The making of bogus pianos is a large and profitable business, as only the poorest materials are used, and though they are highly finished on the exterior, they are within a sham, and endure neither use nor atmospheric changes. The purchaser may say that he bought it on the strength of the maker's name, but a careful examination of the letters, often obscured by flourishes, will show that he has a *Steinmay* instead of a Steinway; a *Chickring* for a Chickering, and *Stock & Co.*, or *Becker & Bros.* were hurriedly read as Steck & Co. or Decker & Bros. Frauds like these are frequently exposed in the courts of New York city, for the makers whose names are thus imitated, finding their business injured, are bringing the sellers of such bogus instruments into court. No doubt these imitation pianos are

to be found in almost every city and considerable town, and it is known that they have been largely sold by traveling salesmen in the rural portions of the South and West. One intending to procure a first-class piano will do well to consult our "Premium List," and see what facilities are there offered; if the purchase is to be made outright, too much caution can not be exercised. It is better to deal at headquarters, even at a distance, as the freight on an instrument—if genuine, has to be paid from the factory, by some one—or if it is proposed to purchase of an agent, in this day of fast mails, it will take but a few days to learn by writing to the maker if the alleged agent is an authorized one....Be cautious, not only as to pianos, but those other musical instruments

MOWERS AND REAPERS,

and other agricultural implements and machines. Last month we gave on p. 354, under the title of

"VERY LIKE A SWINDLE,"

a brief account of some operations in Connecticut, which have caused a number of farmers no little trouble and anxiety. The plan is sufficiently set forth in the article referred to, the special point being that farmers were induced to act as agents for a so-called "Agricultural Works" in New Hampshire; implements were to be sent, the company agreeing to take back all not sold at a given time, and pay all expenses; but to make matters all straight, the agent is asked to give a note, payable at some distant time when it is supposed that the goods will be sold, and if they are not, why the farmer-agent has the agreement of the company to take them off of his hands. Strange to say, there were found even in this reputed the cutest of Yankee States, between twenty and thirty men who have acknowledged that they were foolish enough to give their notes. How many gave them and had rather "pocket their loss" than admit they have been swindled, we shall probably never know. The "Works," as soon as they got possession of the notes, immediately turned them into cash, for being from responsible farmers there was no difficulty in doing this. It is what the signers of the notes might have known that the holders would do. Now what did these note-giving farmers do?—Write and ask us to expose the "Agricultural Works" in our Humbug column, requesting us not to give their names? Not a bit of it! They did the manly thing, one which quite atones for their short-sightedness in giving the notes. The sufferers held a meeting and resolved to help one another, and among other things said as follows: "Whereas," so-and-so (giving the names of the men active in the matter) "have, by false and fraudulent representations and by certain dishonest and grossly deceitful practices, obtained from the individual members of this meeting certain writings, notes, and agreements, constituting one of the most barefaced swindles that was ever practiced upon the farming communities of this State; now, therefore,

Resolved, That we, individually and collectively, to the utmost of our means, power and ability, will resist and defend to the court of last resort, any suit or suits at law or otherwise brought against us, or any of us, by any person, firm or corporation, for or on account of any of said notes, writings or agreements.

"*Resolved*, That we give notice by publishing these resolutions in the State papers, to any and all parties holding any of said notes, writings and agreements, that the same will be protested and resisted; and also in the same manner warn all persons of this State of and against the swindlers above named."

We give space to this because it is an excellent example to farmers all over the country. Farmers in every community should know one another well enough to be able to act together and protect one another, and we look upon the Grange movement as doing much good in this way; but whether there is a Grange or not, there should be a neighborly feeling which will induce each farmer to stand by every other. The courts are quite sure to be on the side of justice—indeed, the exceptions are very rare, and it only needs that farmers who are swindled should take the stand assumed by these in Connecticut, to give all swindlers the worst of it. Therefore we say to every farmer,

DO NOT BE BULLIED OR BLUFFED

by any lightning-rod man, any one who claims a patent right on any gate or other thing you have in use; do not pay any note obtained under false pretenses, but when any of these fellows make claims of whatever kind, promise nothing, pay nothing, and sign nothing. If the claim is an honest one the claimant will allow time for investigation, and the very fact of his refusal of this is presumptive evidence of his dishonesty. There are probably ten swindlers making claims on patents to one honest one. Every well-disposed farmer, if he finds that he has unintentionally infringed on the rights of another, will, when convinced, be ready to make reparation, and every well-disposed owner of a patent will be willing to convince another of his rights. When one of these hogus ones threaten, recollect that he can not hurry you, and that it will take a long time to get his claim before the United States Court, the only court in which it can be tried. Apropos of this subject we would say to every farmer, if you have no

NEIGHBORHOOD FARMERS' CLUB

or Grange, organize one this fall for mutual improvement, as well as for mutual protection.

BAUNSCHEIDTISM.

A correspondent sends us an advertisement of a "Practical Baunscheidtist," and thinks it deserves a place in our Humbug columns. As we understand the matter, this treatment consists in pricking into the skin, by means of needles, a certain oil, called *Oleum Baunscheidtii*. So far as the composition of this oil is kept a secret, it belongs to that class of "remedies" that we consider as humbugs. Inserting remedies into the circulation is something that should be done with the utmost caution, or serious effects may follow. It is bad enough for people to take medicines into their stomachs, but to introduce them beneath the skin is an operation that should not be performed, except by a physician.

HOG CHOLERA MEDICINES.

The New York *Weekly Tribune* allows a Kansas correspondent to protest in very strong terms against those quacks who offer a dose of medicine for hog cholera for $1, and a prescription for $10, and to offer farmers the very excellent advice to "give such medicines and sure-cure swindles a wide berth," which we most heartily second. The hog is a most useful if not altogether a noble animal, and should not be made to take quack medicines in any form; it is well that the *Tribune* allows this plea to be made in favor of the hog. We judge that human animals are of much less consequence in the view of the *Tribune*, as it continues to publish medicines intended for those that are quite as quackish and mischievous as those it condemns for swine.

THE EXPERIENCE OF AN OHIO FARMER

a few weeks ago in New York should be a warning to all strangers, not in New York only, but in all large cities. In such cities, and especially in New York, simply because it is larger than others, many sharpers are always on the look-out for victims. The farmer in question asked two of these fellows on a ferryboat as to hotel prices; they at once offered to show him the hotels, took him to some low place, induced him to drink, and that was the last that he knew, until, on recovering his senses, he found that all his money and valuable papers, including checks, were gone. Of course the liquor was drugged, and equally of course the two fellows were not to be found. Unless a stranger is a good judge of character, he should, in a city like New York, ask information only in some respectable place of business, or of policemen. When men are so willing to offer their services, it is very sure to be the case that they have no good object in view.

Cost of Making Pork.—"A.," New Springfield, O. To make it pay to feed hogs at 8c. a ℔, live weight, upon corn at 80 cts. a bushel, there must not only be kept the best kind of hogs, such as grade Berkshire or Essex, but the feeding and care of the hogs must be most careful, skillful, and economical. It may be made to pay, but it is very rarely done.

As to Renting a Farm.—"A. M." Springfield, O. A good farm of 90 acres, in good grass, should be cheap at a yearly rent of $300. It would be a very poor farmer who could not raise $10 worth per acre, and that would allow a rental of $300, or one-third of the produce, which is a usual rate in renting land.

Timothy and Clover with Hungarian Grass.—"J. F. W.," Lancaster county, Pa. Hungarian grass is a very unsuitable crop with which to sow down grass and clover. Its close growth kills the young grass and clover plants. As to growing crops without manure or the means of procuring it, that will be uphill work and can only end in loss. It is very probable that if rye is sown this fall, and plowed under in the spring, as you suggest, and clover sown then alone upon the well harrowed soil, might succeed. By cutting one crop of hay and leaving the clover until the following spring to be plowed under, a crop of corn might be taken. But there can be no crops grown without manure of some kind.

Successful Rearing of Chickens.—H. T. Wadsworth of Sonoma Co., Cal., is now keeping 800 hens and 500 chickens with satisfactory results. His method ensures success, and is precisely that which has been frequently recommended in the *American Agriculturist*. The fowls are kept in separate houses, each of which holds 50. There is a good range in which the fowls mix together, but all return to their own roosts at night. The houses are sheds 20 by 14; eight feet high at front, and sloping to the ground at the back; having open lattice work at each end for ventilation. The roosts are movable, six feet long, two inches wide, and one inch thick, and are frequently taken down, cleaned, and soaked with kerosene. The sheds are kept thoroughly soaked with lime wash, with some carbolic acid in it occasionally. The sitting nests are treated similarly. The feed consists of shorts and bran; wheat and oats; boiled beef heads; chopped cabbages and corn-stalks and boiled potatoes alternated. Running water passes the sheds and coops. Eight hundred hens consume 10 ℔s. of wheat and 20 ℔s. of oats daily; 26 dozen of eggs have been gathered in one day. The secret of success is cleanliness, a variety of good food and pure water. With these requisites there need be no failure.

Milk Fever.—"O.," Petersburg, Va. Milk fever results from excessive stimulation of the milk producing organs, and is only prevalent amongst high-fed cows. The Jerseys, being bred and fed especially with a view to rich milk, are consequently more subject to inflammatory disease in calving, at which critical period the whole system is in an excited condition. It is not the rich milk they yield that is the cause of the tendency to milk fever, but the system of breeding by which the rich milking quality is encouraged.

Chicken Lice upon Horses.—"G. E. W.," Dresden Mills, Me. When fowls are kept in horse stables, the lice from them frequently trouble the horses. As the vermin cannot easily be seen, the irritation they produce is not readily accounted for; on close examination, however, the very minute lice or fleas may be detected. The remedy is to move the fowls from the stable, whitewash it thoroughly, and rub the horse with a brush smeared with crude petroleum, or a mixture of lard with a twentieth part of carbolic acid.

Tumor on the Jaw of an Ox.—"J. F. M.," Spencer Brook, Minn. To dress a newly broken and discharging tumor with turpentine would cause it to continue running. It was very bad treatment, and would prevent healing. The proper course would have been to wash out the opening with warm soap and water, and then inject with a syringe a solution of four grains of chloride of zinc in one ounce of rain water. If the tumor is swelling again, it should be opened, washed out, and dressed as above. Give one ounce of hyposulphite of soda daily in his feed for a week or two.

"Reader."—Oregon. Had you given your name, we should have written to ask you to repeat your question. All that we can make out is that you wish to know how the Russians do something—but the writing, while it looks well as a whole, defies our power of deciphering.

A Very Early New Grape.—Mr. T. S. Hubbard, Fredonia, N. Y., sent us, Aug. 12th, a cluster of a new grape, from a vine which is an accidental seedling, found a little north of New York City. The fruit began to color on July 19th, was in eating condition by the 31st, and fully ripe and picked Aug. 8th. The quality appears to be about like that of Hartford Prolific, but holds to the cluster much better, and is from 15 to 20 days earlier. It is certainly a remarkably early variety, and will be very useful in localities where the season is short. The variety has not yet received a name, nor are any vines yet offered for sale.

How to Pack and Market Broom Corn.—"S. M.," Herkimer Co., N. Y. The methods of curing, packing, and marketing Broom Corn are all explained in a very interesting book entitled "Broom Corn and Brooms," which costs 50 cents, (or 75 cents bound in cloth,) sent postage paid from this office. It is impossible to give here, for want of space, any instructions that would be of practical use to you, it would therefore be better for you to procure the book referred to, which also contains valuable information about making brooms.

Muriatic (Chlorohydric) Acid for Thrush.—"W. B. McK.," Albemarle Co., Va. This acid is used as a caustic for destroying the diseased tissues so as to permit a healthy new growth. It is therefore used pure, being applied to the diseased parts by touching them with some tow tied to the end of a stick and dipped in the acid. The parts should be previously washed in warm water, and the inner portions of the cracked frog well cleaned by syringing. After the acid has been applied, the cracks should be filled with clean tow; the dressing and washing being frequently repeated. A similar but safer application is one ounce of chloride of zinc dissolved in a pint of water. This is sufficiently strong for a caustic.

Basket Items continued on page 393.

The Dairy at the Centennial.

Much interest has been excited amongst dairymen by the violent squabble, or dispute, which occurred in the committee appointed by the American Dairymen's Association, to take charge of the dairy displays at the Centennial Exposition. A small minority, one person in fact, made itself very conspicuous and demonstrative in opposition to the rest of the committee. The cause of the dispute seems to have been that a patented device for cooling dairy rooms, for which the party in question was the agent, was not put into the dairy factory at the Exposition at the expense of the Association. This party, who is not a dairyman, but a produce dealer, procured the wide publication of his grievances and charges against the committee and the model factory, and went so far as to counsel dairymen not to exhibit their products in the building erected for the purpose. Under the circumstances, this course was a very remarkable one, and unfortunately had the effect of greatly curtailing the contributions of the dairymen to the dairy exhibits.

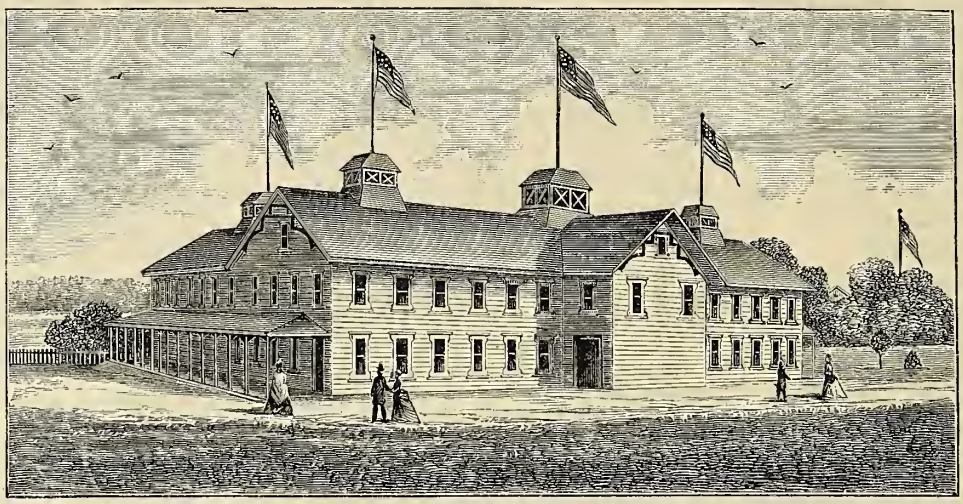


Fig. 1.—MODEL DAIRY FACTORY—CENTENNIAL EXHIBITION.

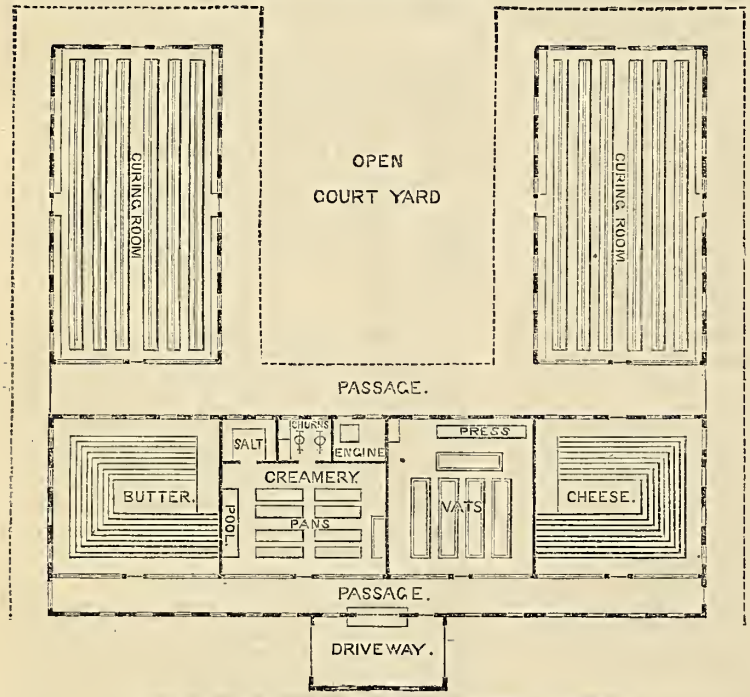


Fig. 2.—PLAN OF GROUND FLOOR—MODEL FACTORY.

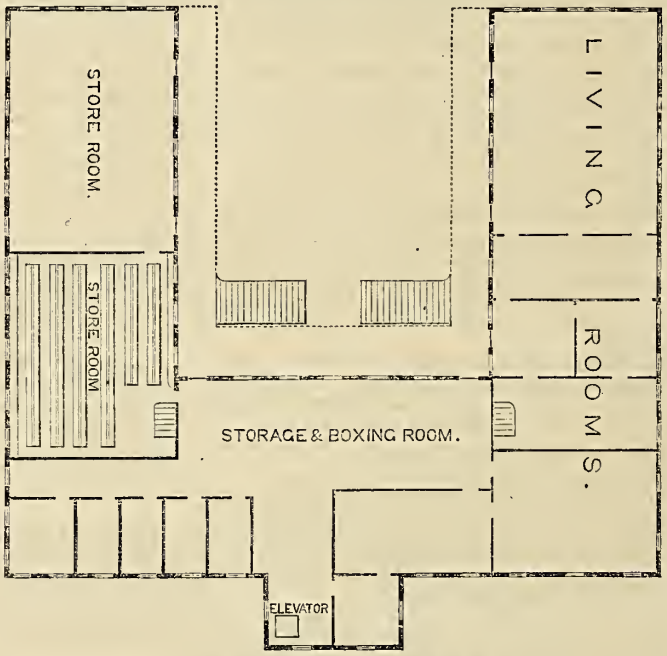


Fig. 3.—PLAN OF UPPER FLOOR.

At the July exhibition of dairy products there were but seven boxes of cheese from New York, against 600 from other places, of which Wisconsin and Canada sent over 200 each. Of course the loss, if any, in this ignoring of a brilliant opportunity,

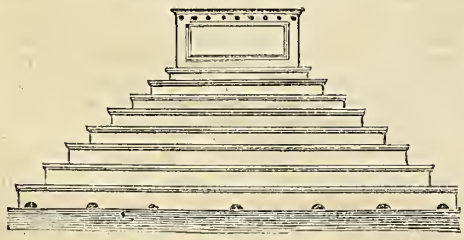


Fig. 4.—STAGE FOR BUTTER.

which cannot soon be repeated, falls upon those dairymen who were misadvised and misguided by injudicious and spiteful counsels. The trouble, however, seems to have passed away by the retirement of the disappointed member of the committee, which is now left in harmony. The Canadian exhibitors, and other leading dairymen, among whom is the Hon. Harris Lewis, of New York, with the committee themselves, have declared the Model Factory to be well adapted for an exhibition, and to be well provided for the care of whatever dairy produce may be sent there for the display in October. We earnestly join with the committee in urging dairymen to seize this opportunity of showing what they can do to the thousands of visitors who will be at Philadelphia this month. It will be ever to be regretted if, having made a beginning by building a model factory, the dairymen should permit or oblige it to become a ridiculous failure by withholding their products, which alone can give the building an excuse for its existence there. Filled with dairy appliances and dairy products, the building would be an interesting attraction amongst many attractive exhibitions; and whatever gain is to occur through the exhibition, the whole will accrue to the dairymen of America.

For the information of our readers interested in cheese factories and creameries, we have engraved an elevation and plans of the Centennial Dairy Factory, built by Mr. Wm. Blanding, of Hawleyton, Broome Co., N. Y. The building is shown at figure 1, the main floor at figure 2, the upper floor at figure 3, the stage for the butter with ice-box and cooler at figure 4, and the section of cooler at figure 5. The building has a drive-way in the front, in which are the platform and scales. An open passage is made the whole length of the building, from which the doors open into the various departments, as shown. At the rear is an open court yard, and an open passage way, sheltered by a broad veranda, runs all around the wings. The construction gives abundant air and ventilation, and perfect facilities for the utmost cleanliness and neatness. The main building is 116 by 28 feet, and the wings 56 by 30 feet each. The cheese-room, butter-room, and creamery, are each 30 by 28 feet, and the cheese make-room is 26 by 28 feet. The second floor contains store-rooms and living-rooms. Grated ventilators are in the floor and ceiling of all the passage ways and store-rooms, giving abundance of ventilation, which can be regulated by slides in the grates. The plans of the butter and cheese-rooms in the main building are readily understood from the engravings. The raised platforms admit of thorough ventilation, and in the butter-room a constant flow of cool air is procured from the ice chest. The model factory is not furnished with shutters, which would be needed for actual use, to shade the store-rooms from the sun's heat, at least on the upper floor. The lower floor is well sheltered by the broad veranda which surrounds the building, and there shutters might not be needed. The extra expense, however, would be small in comparison with the benefits that would be derived from them. The cost of the building is about $8,000, which, however, is large on account

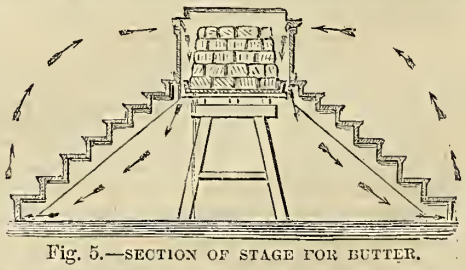


Fig. 5.—SECTION OF STAGE FOR BUTTER.

of the difficulties of building in a city, but is not by any means excessive for a house of this size, and completeness and thoroughness of construction.

Read the Supplement with this Number.

The Publishers call special attention to the Supplement, an extra sheet printed this month (making **52** pages in all). The descriptions and illustrations of a large number of useful articles will give considerable information. It will be worth while for all to **read through** what is contained on the first and second pages of the extra sheet. Announcements are therein made which are of interest to all our readers. It will be noticed that all new subscribers for 1877 received this month will be supplied with the remaining numbers, issued this year after the reception of their subscriptions, **without extra charge.** This fact will help those who are proposing to raise clubs of subscribers, to commence at once upon their **easy work,** and no doubt very many will avail themselves of this opportunity of securing, with **so little effort,** some of the useful and valuable articles as described and illustrated in the supplement sheet....As Editors, we promise to spare no effort to meet the wishes of the Publishers, to have the *American Agriculturist* for the coming year exceedingly valuable to ALL its readers. We trust our readers will agree with us, that a Journal like this, going into a family for a year, will not only exert a healthful influence in stimulating thought and improvement, and thus elevate the mind standard of all cultivators of the soil, and of others too; but that it will also help guard against errors, against imposition, and assist all to make their labor more profitable. With this view, we invite all to lend a kind influence in making this journal even more widely known, and in drawing to it as readers, many who are now without its visits. This we ask as a friendly favor, aside from the rewards which the Publishers offer on a liberal scale to those who respond to their propositions.

Something About Premiums.

The *American Agriculturist*, when it passed into Mr Judd's hands, nearly 25 years ago, had a very limited circulation. Having become proprietor, he determined not only to give it a reliable character, but to largely extend its circulation among those to whom it would be useful. Instead of employing agents, as had been the custom with other papers, he hit upon a plan which made every man an agent, and gave that man a good commission for what he might do in extending the circulation of the paper—whether he sent in one or one hundred names. Instead of paying agents a salary or commission, he offered good or useful articles at much less price, if paid for in subscriptions, than they could be purchased for with ready money. Other agricultural papers took up this plan of giving premiums, and some of these continue to offer premiums. Others, finding the trouble of selecting premium articles of *the very best quality*, was more than they cared to undergo, ceased to give premiums, and all at once became very virtuous, denouncing the premium system, and proposing to pay money for new subscribers. Our arrangement is this: those who procure 20, more or less, subscribers, can have them at a certain lower price, or they can have their remuneration in excellent and useful articles. When an article is put upon our premium list, it is a guarantee that we think it has merit, and as it is offered in our premium lists and brought to the notice of hundreds of thousands of readers, that very fact induces the makers of the articles to give us those sent out as premiums at a very low rate. Knowing from our correspondence that this plan is most acceptable to our subscribers we have seen no reason for abandoning it. It has allowed those who live in remote places, far away from cities, to enjoy many household conveniences, farm and garden implements, and seeds, which they could not otherwise have, and it has enabled those who live in thickly settled communities to procure, by the expenditure of a little time, implements, machines, books, etc., that they could not otherwise possess. The premium business is a good deal of trouble, and to carry out the plan requires the employment of a special force, but so long as it meets the wants of so many people, it will not be given up. The premium list is not the same from year to year, but each October we publish a revised list, in which, for good reasons, some articles have been dropped, and others added. The premium list, in order not to encroach upon the space devoted to reading matter, is published in a supplement to this number, and will be found of interest to many of our readers.

Ogden Farm Papers.—No. 80.

BY GEORGE E. WARING, JR.

There seems to be something like "a revival" among the butter makers. I have had more letters during the past two months, asking about the construction of dairy houses, and the deep can system, than I had received in two years before. The following letter is a very good type of those received, and the information asked, seems now to be so generally desired, that it is worth while to repeat it, (with some modifications), although it has already been pretty well stated in these papers.

"I have a good spring of water, convenient to my barn, which delivers at the surface of the ground, it flows the whole year round, and the temperature of the water is about 50°. I propose to build a dairy with a room 10 x 12, the floor being 2 feet below the level of the ground, and cemented, and the walls to be of stone. Will it be enough if I make a water space in one side and one end 3 feet wide? I want to accommodate a dairy of 20 cows. I propose to erect a wooden room in which to make butter. Shall I have water space enough if I use cans 20 inches deep? Is there any danger of getting the milk too cool in such a room? Will three windows, 3 ft. square, one in each side and one in the end, be enough? Will I need any more drainage except a drain to carry off the waste water? As the whole bottom will be cemented, will there be any disadvantage from its being 2 ft. under ground? What butter worker would you advise getting? I think of getting a light horse-power, or dog-power, for churning."—This correspondent goes on to give the reason why he is going into butter making—he is disgusted with the factory system as practiced in his neighborhood; last year he sold his milk for $1 per 100 lbs., but the firm breaking, he lost nearly $200. "This year they manufacture and sell cheese at $2 per 100 lbs, and declared a dividend for April of 63 cts. per 100 lbs. of milk, May 68 cts., and June 52 cts. That is as far as they have settled—in fact there is no settling about it, as we see no sale bills, and take what is left after they get what they want."

Another correspondent in Wisconsin uses a windmill to pump water for cooling milk before taking it to the factory, and says there have not been twelve nights this summer when there has been wind enough to pump what water was needed. He thinks he would prefer to pump by hand, rather than to depend on a windmill.

The question divides itself into two branches, one, where there is a natural spring of cold water, and the other where the water must be obtained by artificial means. The experience at Ogden Farm in this matter for nearly ten years past, has been with the artificial system, and I must say that it has worked, on the whole, very well. Being on the coast, we doubtless get more wind than we should if we were far inland, but with considerable observation of the use of windmills, I think that even where they cannot be depended upon to work every day, they would so greatly reduce the amount of hand-pumping needed, as to make their use always advisable. Our spring is a deep well, which overflows during seven or eight months of the year. It is about 1,000 feet away from the buildings, and the surface of the water at its highest, is about 35 feet below the milk-house tank, and about 50 feet below the barn tank. We use the smallest windmill that is made, (8 feet in diameter), and force the water through wooden pipes, (4 inches square, with 1½ inch bore). For the first year or two checked places in the pipe sprung a leak, and had to be pinched together with a very simple clamp and carriage bolts. For five years past the pipe has not needed looking at, and I am satisfied that there has been no leakage. During a very long drouth, like that of this summer, the water gets so low in the well, that we are obliged to economize it, and as we have over forty head of stock to water, we can take no considerable amount for the milk-house. This has been the driest summer that we have had since the improvement of the farm was undertaken, and from two to four weeks past we have been obliged to use ice in the water tank. Every summer we are subject to a little inconvenience of this sort, but for ten or eleven months of the year our system works perfectly. Of course, if one has a constant spring of cold water at a sufficient hight to flow directly into the milk-room, the whole problem is solved, and everything is easy.

To answer the above letter: I would say that if the ground is dry—not springy, winter or summer—then the building may be set with the surface of its floor two feet below the ground, thoroughly concreted, and have only a drain to carry away the overflow of the tank; but if there is the least tendency to springiness, there should be a good underdrain laid under the foundation walls, and this should have a perfect outlet, to make sure that in wet, winter weather, there shall be no moisture under and about the walls, to enable the frost to heave them, or to ooze through the walls themselves. In addition to this, the walls should be surrounded for a width of at least a foot with gravel, or small stones, which will prevent the frost from taking hold of them. In our experience we have had more trouble from the cracking of the cement of our water vat, by the heaving of the outer walls, than from any other source. For a dairy of 20 cows the tank proposed is much to large. It will be ample if it is made 3 ft. wide and 10 ft. long, or across the end of the building, Indeed, a length of 8 ft. would be sufficient—supposing the milk to stand 36 hours before skimming. The smaller the surface of the tank, the less is the absorption of heat, and the more effective will a limited supply of water be in keeping down the temperature. As the tank is surrounded with thick walls, the only material absorption of heat will be at the surface, so that there is no objection to its having considerable depth, and I think it would be better that it should be 2½ ft. deep, rather than 1½, although the latter would be enough for 20 inch cans, for in the case of a slight leakage from any cause, there will still be water enough to warm the cans, when it stands even a foot below the surface. The water should be admitted at one end, and should overflow at the opposite end, which will keep up a slight movement of the cooler water throughout the mass. 50° is 4° colder than my stream, which I find to answer a good purpose, though I should prefer it to be even as low as 40°, were this possible. In carrying the water from the spring to the tank, the pipe should be laid, if possible, 3 ft. under ground, to keep it cold. Enough ventilation is enough, and two windows will be quite as good as three. Indeed, although we have two windows we use but one of them. An artificial power for churning will, of course, save labor, but for a dairy of 20 cows a dog will certainly answer as well as a horse. The butter worker that I use, is a table 3 ft. by 2, made of white oak, inclined a little to one side, with a groove cut along the lower side, and the two ends leading the butter-milk to a drip, under which a pail is placed. About ten pounds of butter are worked at a time, with a paddle of white oak a foot long, and with a handle at each end. The edge of this paddle is slightly sharpened, and it is used so as to chop the surface of the butter, spreading it out over the table. Then a sponge squeezed out of cold water, is used to sop up the butter-milk and moisture that appears on the exposed surface of the butter. Then the mass is turned together and chopped again, and again sponged; these processes are repeated until the butter is dry. We use Bullard's oscillating churn, which is a long rectangular box, with no paddles or cleats inside. Just a plain box, tightly closed at the top; it is moved horizontally endwise, and the cream washing from end to end, keeps the sides always washed down, and thus avoids the accummulation of half churned cream, which is very apt to attach itself to the sides of any paddle churn, and which, becoming mixed with the butter, may make it streaked, and interfere with its keeping qualities, for the reason that unchurned cream contains a certain amount of casein. The wooden room for making the butter had better be placed on top of the milk-room, as tending to protect it from heat more than a simple roof would do. Indeed, if drainage at a sufficient depth can be obtained, it would be better that the milk-room should be a cellar deep in the ground,

where the influence of the outside temperature would be very much less—the walls projecting above the ground only enough to give room for the ventilating windows. In cold climates, as a protection against frost, some artificial heating will be needed, even if the milk-room is deep under ground, and this may be best effected by pipes for the circulation of warm water, such as is used in greenhouses, the fire being outside in a lean-to. The same pipes may be extended to warm the churning room above. In summer time, the cream which awaits churning should be kept in a can immersed in the water tank. In winter it should be stood on or near the hot water pipes, long enough to have its temperature raised to about 60°.

Where an artificial supply of water must be depended upon, that is to say, where the water is to be pumped from a well or from a distant spring, the arrangement of the milk-house, water tank, etc., may be the same. The location of the windmill, and the arrangement of the water supply, must depend on circumstances. For illustration, we will assume that no spring and no constant well is available. In this case the best plan will be to construct a very deep cistern—20 feet would be better than less—immediately under the milk-room, and to place a windmill immediately over it, or very near to it. The water should be pumped through a suction pipe leading to the very bottom of the cistern, and delivering at the top of the tank—not coming up to the churn room and running from there to the tank, because this would expose it more to the heat of the atmosphere. The overflow should be conducted by a pipe to the *top* of the water in the cistern, say at the level of its overflow drain. As the only loss of water by this system would be by evaporation from the surface of the tank, and as very slight additional supply would be needed to compensate for this, the roof of the milk-house itself would doubtless furnish all that would be needed, and, indeed, the leader should not be more than one inch in diameter, so that in the case of heavy summer showers, there would be only a small amount of warm water delivered into the cistern. The smaller the shower supply, the colder will the water in the cistern be kept. Water in the bottom of a 20-ft. cistern, would be cold enough to keep the milk at a sufficiently low temperature, but to provide against long calms, when the windmill would not deliver enough water to cool the milk, without carrying too much heat back to the cistern, hand-pumping will sometimes be necessary. The size of the tank should be carefully adjusted to the requirements of the dairy, so that there need be no more surface of water exposed for the absorption of heat than is absolutely necessary. Indeed, it would be well to divide the tank with partitions, so that when the yield of milk is small, the water surface may be reduced.

The deep-can system, on which the foregoing directions are of course based, seems to have surmounted its "hard places," and under the influence of Hardin's patented apparatus, to be spreading itself very generally; but I desire to enter a slight protest against the success of this system being ascribed only to Hardin's device for using a refrigerator. We who have been advocating the matter through all these years on the cold water basis, object to having our credit entirely frozen up by the refrigerator method. The principle is the same in both cases, and whether the heat of the milk is abstracted by cold water or by cold air, is only a question of detail. The great point is that the milk shall stand in deep masses with the least possible exposure of surface to the air, and that it shall be kept at a temperature so low as to preclude the possibility of any souring during the time required for the complete rising of the cream. This may be done with water at 54°, but there may be a certain advantage in getting down even to 40° or less.

While the leading principle of Hardin's system is based on the use of deep cans, he has undoubtedly very much extended the range of its use wherever ice can be obtained in liberal quantities. Furthermore, we must accord to his vigorous advocacy of his method, the credit of developing the merit of the deep-can process, and securing its endorsement by many influential writers, who were formerly opponents of everything excepting the old-fashioned system of shallow setting, or the use of large shallow pans. Mr. John I. Carter, who is the manager of the Eastern Pennsylvania Experimental Farm, has made a thorough trial of Hardin's method, and reports as follows: (1) Milk set in deep cans, under proper conditions, will produce as much butter as will milk set in shallow pans. (2) Milk set at 40°, under proper conditions, will yield as much butter as if set at 60°. (3) Neither light nor ventilation are of any importance if the milk is sound, and kept at a low temperature. (4) Butter from milk set in tightly covered cans, at a low temperature, will be better, and keep longer than that from shallow open pans, at the temperature of spring-houses or vaults in hot weather. (5) Butter made from milk so set in cans, will be of more even quality than that made from milk exposed to the usual atmospheric influences.

The "Lancet," (London), of April 20th 1876, describes experiments made by the French Inspector General of Agriculture. He set cow's milk at various temperatures between the freezing point and 90°, and maintained the temperature for twenty-four or thirty-six hours. He found that the nearer the temperature is to the freezing point, the more rapid and larger is the collection of cream; the greater the amount of butter; and (because of less evaporation) of the skimmed milk also; the better the quality of both the butter and the skim-milk cheese. His theory of the cause of this result is, that the changes in the milk are due to a fermentation, proceeding from the growth of organisms which set up the process. He thinks that the application of this principle need not be confined to ice-producing countries, as a sufficient refrigeration may be secured by the use of running water. Mr. Ezra Michener, of Bucks Co., Pa., who, in repeated trials made several years ago, secured results strongly favorable to shallow setting, now believes that those results were caused by his neglect to take off all the cream from his deep cans, and since he has tried them more thoroughly in Hardin's refrigerator, he reports that the deep system gives the best butter; that it secures all the butter that the milk can yield; that the labor is much less; and that there is only the drawback that as the bulk of cream is increased, the labor of churning is increased in due proportion. As an offset to this the labor of taking care of the dairy utensils is very much reduced.

The chemical department of the Inland Revenue Service of England, has recently made analyses of 117 samples of butter, showing a remarkable uniformity of composition, except in the amount of water contained. This varied from 4.15 per cent to 20.75. May this not account for the difference between the firm, waxy, solid butter of the Jerseys, and the always soft, and sometimes almost oleaginous butter produced by poorer breeds? The water here referred to is not that which might be removed by better working, but is really water of composition, water which it is impossible to abstract by any process of manufacture. A difference of 15 per cent in the amount of water contained in butter, mitigates in some degree the enormity of the high price obtained for what is known as "gilt-edged" butter.

We have recently had a striking illustration of the influence of inheritance in developing the milking tendency. We have a heifer, now two years old, which is descended from some of the most persistent milking stock of the herd. On the 11th of June last she was observed in the pasture to have developed a full bag, and to be leaking her milk. It was supposed of course, although she was full in the flank, that she had aborted her calf at about 7 months. She was taken to the stable and milked regularly, giving from two to four quarts a day. I might have sold her for a fair price at the time, but owing to the value of her family, determined to keep her over, let her miss a year, and trust that she would come out all right after that. Two months later it became evident that she was carrying a living calf, and on the 27th of August she produced a perfectly formed and healthy, though very small heifer calf, which is now thrifty and promising. She has increased materially in her yield of milk, and her udder has become very much developed. This is an almost unique instance in my experience, but I believe that it may be sufficiently accounted for by the fact of the accumulation in her ancestry, (long bred with much care for milking qualities,) of a tendency to the production of milk, which has finally overleaped its natural bounds, and has attained a considerable development at an unusually early period of pregnancy.

Bee Notes for October.

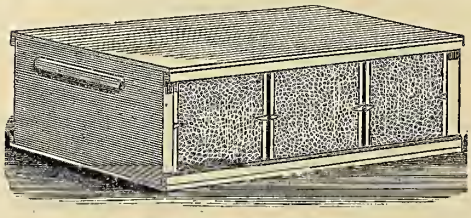
BY L. C. ROOT, MOHAWK, N. Y.

Preparing Honey for Market.

The form of the package that contains liquid honey will vary in different markets, yet one rule should always hold good. Whatever its size may be, (whether jelly cups, fruit jars, pails, or cans,) let the package be such as will be useful to the purchaser after the honey is consumed. A few seasons ago we used a large number of fruit jars of inferior quality, because of their cheapness, and the result was that all honey put up in standard jars sold first, and some of these inferior cans had to be emptied into flour pails before the honey could be sold. Some markets call for small packages, even as small as one pound or less, while others will call for larger ones, from which to retail in such quantities as may be desired.

I believe that when the process of removing honey from the comb by centrifugal force is more fully understood, and its perfect purity is appreciated, honey in this form will be more generally called for. In cold weather it candies, becoming very hard, in fact so hard that when very cold, it may be cut from a tub with a knife, and dealt out in a paper as readily as butter.

If box-honey is to be transported any distance to market, it should be properly packed in cases for that purpose. The number of boxes packed in a case will depend upon their size. Cases should not contain over 50 lbs. each. The ends of the case should be of basswood, and top and bottom of pine, if preferred. The sides of the case should be left open to show the honey, with



PACKING CASE FOR HONEY.

simple strips an inch wide, nailed across the top and bottom, as shown in the engraving, to keep the boxes in place. Two ends, with a handle on each, a top and bottom, and four inch-wide strips are required for each case.

Replies to Questions.

"What cheap work on bee-keeping would you recommend?"—I believe no book is better adapted to the wants of the beginner than "Quinby's Bee-keeping Explained."

"How late in the season is it safe to extract honey, and leave ample time for bees to fill up for winter?"—This depends upon the location, and yield of fall honey. Each one must understand his own locality, and be governed accordingly. In some sections bees gather little honey after Sept. 1st. In others they would secure enough for winter stores if the weather was favorable.

"Is buckwheat honey good for wintering bees?"—It is not considered the best food for winter, but if my bees could secure enough for winter stores, I should deem it advisable to extract all the white honey, and allow them to use the buckwheat honey.

"Is it expedient to take one or two frames of honey out of very heavy hives in the fall?"—If, after equalizing the honey, as directed in the Sept. Notes, too much remains in any hive, it would be well to remove some of it, and place empty combs in the center, where the bees can occupy them; or, if there is not a supply of empty combs, extract the honey from those removed, and return them, placing them in the center of the hive.

"At what time do bees stop breeding in the fall?"—Breeding will continue as long as forage of any kind abounds.

"Would you advise increasing the number of swarms in the beginning, or near the close of the season?"—If new swarms are to build their own combs, I should advise making swarms early in the season, but if empty combs can be furnished, it would be desirable for some reasons to make them later.

"What hive, and what sized frames are preferable?"—My preference is proved by the hive I use exclusively,

which is fully described and illustrated in the January No. of the present volume of this paper.

"Why do apiarians put combs 1¼ inch apart, when the bees naturally build them but 1¼ inch?"—One inch and one half apart from center to center, including space between combs, is found to be nearest accurate.

"Should bees be housed during winter, or left on their summer stands?"—To answer this question fully, would require an entire article. If all the necessary requirements are complied with, I am emphatically in favor of in-door wintering.

Science Applied to Farming.—XXII.

BY PROF. W. O. ATWATER.

More about Scientific Investigations—German Potash Salts.

I sometimes wonder what some of my good conservative farmer friends, who are satisfied with the old ways of tilling, breeding, and feeding that our great-grandfathers tried and proved, and take no stock in new-fangled notions and scientific theories, would think if they were to see how the experiments are made in the German and other European Stations, the labor, patience, and money they cost, and the ways their results are applied. The accounts of the experimental investigations on the subject of Animal Nutrition that have been published during the last fifteen years in the German language alone, would make what most people would call a good-sized library. The experiments thus described are numbered by hundreds and even thousands, each one of which has cost the labor of days, weeks, and even months. They have called in requisition the services of the ablest scientific men and the most successful farmers. They have involved an incalculable amount of thought, care, and toil, in the laboratory, the stable, and the study. The labor, much of it of a menial sort, has been performed willingly, even enthusiastically, by those to whom it has brought not wealth, but only meagre support. And it has at length come to be appreciated by the public. The first Agricultural Experiment Station was started in Germany some twenty-five years ago. There are now over seventy on the Continent of Europe, and are increasing more and more rapidly year by year, and many of them were founded by the farmers themselves, who contribute largely to their support.

Many will say: "Well, what real practical good do plain farmers get from all this scientific experimenting and book-writing?" These investigations have done a vast deal to settle the questions about stock-feeding, that occupy so much space in the papers, and are perplexing as they are important to millions of farmers on both sides of the Atlantic. Combined with the results of daily farm experience, they have shown for what purposes different kinds of fodder materials are best fitted, and how much each is worth; they have taught the farmers how to make valuable fodder out of poor hay and straw, how to employ lucerne, seradella, clover, and other forage crops to the best advantage; how to utilize waste products like flax-seed and cotton-seed and the oil-cake made from them, like the refuse from the manufacture of sugar from beets and of alcoholic spirits and starch from potatoes and grains; they have shown in what proportions these and scores of other fodder materials should be mixed and used, so as to get the greatest benefit from the least cost. And much as has been accomplished in the matter of feeding, still more has been learned about the nature and use of manures, and the cultivation of crops.

Correspondents frequently ask "Why not translate into English that German Farmer's Diary, you occasionally speak of as giving fodder and manure tables, and so much other condensed and practical information for farmer's use?" Well, that is a remarkable little book, and there are a number of others that, like it, are brimming full of just the plain, concise, practical information that every farmer most urgently needs, and nothing but the most costly research, combined with the longest and best experience can supply. But these books are prepared, not for American, but for European farmers, and if put into English, would not be quite adapted for use here. In the matter of cattle feeding, for instance, many of the fodder materials most common in Germany, are but little known here, and *vice versa*. The German fodder mixtures are full of such articles as lucerne, seradella, rye-grass, bean-straw, rape-cake, beet-cake, and potato slump, while Indian corn and meal have not been experimented with to any extent there. We need tables and directions based on investigations of our home products. With what has been done on the other side of the water, these researches will be comparatively easy, but they must be made before we can have the results adapted to our use, as the German farmers have them.

Those who read these articles will perhaps be inclined to think that some of them are, at the bottom, less attempts to give practical information to farmers, than arguments for scientific experiments. Well, that is exactly what I intend them to be, and if I were to speak my mind freely, I should say a good deal more in the same direction. The fact is that the time is coming, indeed it has come in our older States, when we must better understand how to manage our soils, our fertilizers, our crops, our feeding materials, and our stock, or fail in our farming. And this definite knowledge of the principles that underlie the right practice of farming, is not useful simply for the better crops and larger profit it will bring. Like other knowledge it has a worth of its own, which can not be reckoned in dollars and cents.

German Potash Salts as Fertilizers

is a subject about which I receive a great many inquiries. In the German farmers' books spoken of above, most of these inquiries are plainly and concisely answered. But, as nothing of the sort is easily attainable in English, I will try to reply briefly to some of the most important ones.

The potash salts from the mines at Stassfurt in North Germany, are at present the most important source of potash for agriculture. It is a comparatively few years since the deposits were discovered, but the products have come into very general use in Germany and other parts of Europe, and are being imported quite largely into this country. When rightly used on soils deficient in potash, they are very profitable fertilizers. A vast amount of experimenting has been done with them, more in Germany than anywhere else. The results indicate that the usefulness of these salts as fertilizers depends not only upon the character of the salts themselves, of which there are various grades, but also on the kind of soil, the method of application, and the kind of crop.

The potash salts as taken from the mines contain only small proportions of potash compounds, the bulk consisting of other materials which have comparatively little agricultural value and are sometimes positively injurious. In the early history of the Stassfurt potash industry, many experiments were made with these crude salts, but, with the exception of the "Kainit," their use has been attended perhaps oftener by failure than by success. It has been found necessary to subject them to chemical treatment, by which the potash compounds are more or less completely purified. This is done at factories near the mines, where immense quantities of the potash salts are manufactured for technical and agricultural uses. As prepared for market, the potash fertilizers contain potassium in the form of either chloride of potassium or sulphate of potash, and, along with these, chloride of sodium, chloride of magnesium, sulphate of soda, and sulphate of magnesia.* The kinds and amounts of the potash and other compounds, varies with the different brands. The chloride of sodium (common salt) is sometimes beneficial to crops, and sometimes otherwise. The sulphate of magnesia is often very useful. But the chloride of magnesium, when present in considerable quantities, is apt to be positively harmful.

* For explanation of these chemical terms, and further accounts of their composition, value, and use, see "Science Applied to Farming Correspondence," on page 395.

High and Low Grade Potash Salts—Sulphates and Chlorides, (Muriates).

Besides these concentrated salts, a number of articles of lower grade, either waste products from the purifying processes, or in their original form as dug from the mines, are sold for fertilizers. As stated above, in some of these salts the potassium occurs as sulphate of potash, in others as chloride of potassium, or, as called by dealers, muriate of potash. They are accordingly known either as *Sulphates*, or *Chlorides*, (*Muriates*.) It is customary to reckon the potassium in all as "actual potash." By this is understood the amount of pure potash or potassa, which is either present as such in the salt, or would be if all the potassium present were in that form. The amount of actual potash varies in the different grades, from 7 or 8 per cent in the lowest, to 50 per cent or more in the highest. Unfortunately a large part of the German potash salts imported into this country, are of the lower grades. The disadvantage in purchasing these poorer articles, is a double one. They furnish very little potash, the bulk being made up of other and inferior or injurious compounds, and the purchaser has to pay the cost of freight and handling this extra material from the mines in Germany to his farm.

Use of the German Potash Salts.—Kinds to Select.

It is clear that for this side of the Atlantic the high grades must be the most economical as potash fertilizers. The *sulphates* are, on the whole, preferable, but the potassium in these is more costly than in the *chlorides*. The *chlorides* sometimes injure the burning quality of the leaf of tobacco, decrease the amount of starch in potatoes, and make them less "mealy" than is desirable, and decrease likewise the amount of sugar in sugar-beets. The sulphates, on the other hand, are always safe. They increase the quantity of the crops as much as the chlorides, without injuring, indeed often improving the quality. For buckwheat, corn, wheat, oats, and other grains, for grasses, and for wet soils, the chlorides are very highly recommended, and because of their cheapness, often to be preferred to the sulphates. To the lower grades, which contain large quantities of chloride of sodium, and sometimes of chloride of magnesium, the same objection would obtain as to the chlorides of potassium, but in greater degree. Generally speaking, the most desirable grades for our American farmers will probably be:

For Sulphates; either the highest grades, which contain from 75 to 90 per cent, or more, of sulphate of potash, corresponding to from 40 to 50 per cent of actual potash; or the sulphate of potash and magnesia, which contains 54 to 57 per cent of sulphate of potash, and 34 to 38 per cent of sulphate of magnesia.

For Chlorides: the "muriate" with 80 to 85 per cent of chloride of potassium, corresponding to 50 -52 per cent of potash.

None of these salts have any considerable amount of chloride of sodium or magnesium. There is a grade of so-called "Prepared Kainit," which contains some 29-33 per cent of sulphate of potash, which may also be recommended.

Where and How to Apply Potash Salts.

Whether a given soil is deficient in potash or not, is a matter that can best be learned by actual trial of potassic fertilizers. A great deal of care is necessary with these manures. Many failures result from misapplication. One cardinal point to be observed is the necessity of having the potash evenly and deeply distributed through the soil. To this end the potash fertilizers should be applied as long as possible before the seed is put in, either in very early spring, or, still better, in the previous autumn, for a spring or summer crop. It is an excellent plan to compost or mix them with earth before using. They should be either plowed or harrowed in. Potash salts are generally most useful when applied with phosphates and nitrogenous manures. In Germany, where the potash salts have come into general use, quantities corresponding to 200 to 500 pounds of the higher grades, and from 300 to 600 pounds of the lower grades to the acre are recommended. They have been found particularly good

for grass, clover, and other fodder crops, for beans and peas, tobacco, flax, grains and root crops.

A Southern House Costing $2,300.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans, designed for a Georgia residence, will be adapted to the requirements of others desiring to build an inexpensive rural home, in any of the Southern States.... **Exterior** (fig. 1).—The plan indicates that the proprietor is not circumscribed by want of land, and prefers to extend the area of the ground floor, rather than to build upward. The breadth of the front (48 feet), the large entrance and window openings, the spacious verandas, and broad steps, are each prominent and desirable features, indicative of comforts and hospitality. The elevated or second story part of the Maiu House forms a substantial and fitting center, around which the roofs of the wings and verandas incline, and adds largely in giving poise and character to the whole building. The hight from the ground to the frame work of the building is two feet. Its location should have a good surface drainage assured during rainy seasons, and afford pleasant outlooks from the verandas.... **Interior.**—In most parts of the South very much of the year could be comfortably spent out of doors altogether, but for the requirements of shade and retirement. There are times, however, when severe weather makes it necessary that one's family should be well housed, and when a good fire is both a luxury and necessity. A house for such a latitude should have large rooms, with high ceilings, an abundance of door and window openings, and a plentiful spread of shady verandas. Where practicable, the windows should have folding sashes opening to the floor, if protected by outside coverings. There should be at least one chimney in the main or highest part of the house, having a large

Fig. 3.—SECOND STORY OF MAIN BUILDING.

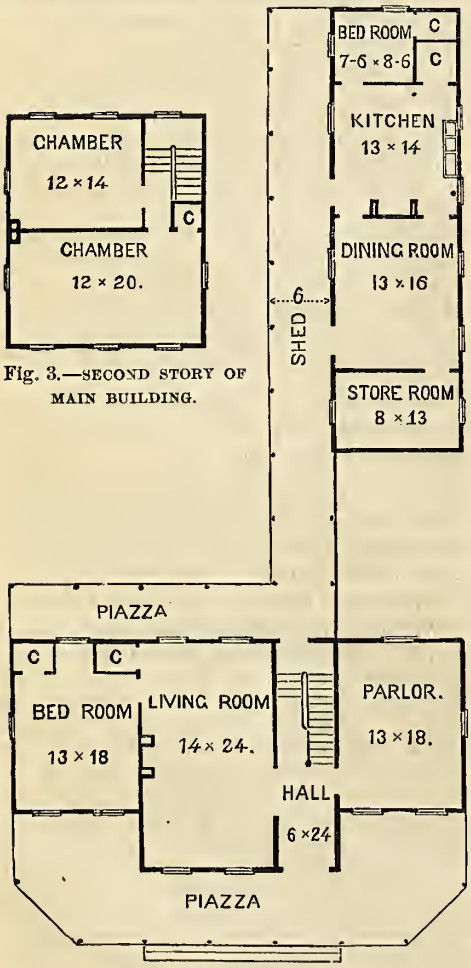


Fig. 2.—FIRST STORY.

open fire-place adapted to the use of wood for fuel, and having openings near the room ceilings into the flues, for ventilation. The Dining Room, Kitchen, and the more domestic offices, require a separate and distinct building, situated a short distance in the rear of the house, and connected with it by a covered passage way.... **First Story** (fig. 2).—Hight of ceiling 10 feet. The simple arrangement shown provides for each of the above

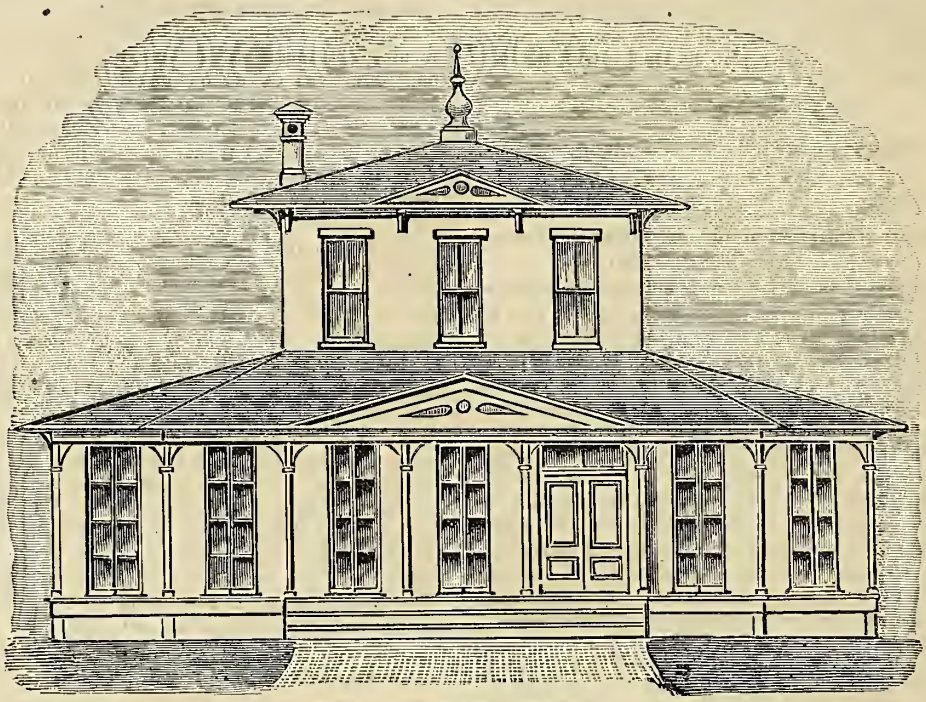


Fig. 1.—FRONT VIEW OF HOUSE.

requirements. The front Entrance is through large double doors. The Hall extends through the house. The Living Room, a large apartment adapted to a good sized family, is centrally situated, and protected on every side from the direct rays of the sun; it adjoins the pleasant and shady verandas front and rear, both being accessible through the folding windows, that open like doors down to the floor. It communicates with the hall through wide double doors, has a large closet and an open fire.—The Bed-room is of good dimensions, has three windows opening to the verandas, and one side window. The two closets are so arranged as to form an Alcove to the rear window. The ceiling of this alcove is arched over, producing a very pleasant effect. An opening is made near the ceiling into one of the flues of the adjoining chimney for ceiling ventilation.—The Parlor (or Library) is situated in the most quiet part of the building, where company may be entertained, or persons may engage in reading or study, without disturbance from those engaged in house-work. Large windows open to the front veranda, and other windows are provided at the side and rear. A covered Passageway leads from the rear hall door to the food departments. These consist of a Dining-room, Kitchen, Store-room, and two Closets, and to the rear of these is added a Servant's Bed-room.—The Dining-room and Kitchen are each of ample size, with windows arranged on opposite sides, to admit a plentiful supply of fresh air. A Pump, Sink, and two Wash-tubs, are provided in the kitchen. The store-room and closets are thoroughly shelved. If desirable, a china closet may be easily constructed at one side of the fire-place, into which one of the doors already provided would open.... **Second Story** (fig. 3).—Hight of ceiling 9 feet. This may be divided into two or more rooms, as required, for Bed-rooms. The cross-partitions may be 8 feet high, admitting a free circulation of air through. .... **Construction.**—Brick piers, placed 6 feet apart under all sills, are intended for the foundation. The remaining space is left unobstructed for the circulation of air. A cellar may be excavated, and walled up under the main house, with stairs leading to it from the rear veranda, under the main flight. In the estimate provision is made for a regular frame of sawed timber, which should be framed and raised in a substantial manner. The siding for the main house and wings is of 6-inch pine clap-boards, laid 5 inches to the weather. The roofs of the main house and wings are laid with hemlock boards; all other roofs and cornice projections are laid with inverted 1 × 4½-inch tongue and grooved pine flooring, and lastly covered with I C charcoal tin, locked and soldered in the best manner. The cornices are constructed with good projections, and have neat truss supports. The verandas are made with simple parts. The columns for the front are 7-inch boxed, with bases, and scrolled spandrels—for the rear of 3 × 4 joist with bases, and plain spandrels. The veranda plates and rafters are planed for painting, and of course left exposed to sight. The pediments shown on the front are of open work, to allow the warmed air from near the roofs to escape. The upper framework (plates and rafters) of the rear building are also planed, and left exposed to sight from the inside. The inclosing and partitions for this part are of 1 × 4½-inch pine tongue and grooved flooring, dressed on both sides, put on in a vertical manner, and nailed to the sills and plates. 1½-inch pine battens are put around the inside of the rooms at the proper hight for a chair-rail (2¾ feet to the upper edge), and joined to the casings of the doors and windows of like materials, and all thoroughly nailed with "clinch" nails to the upright boarding.—The roof is built as described for the verandas, is double pitch, and has sufficient spread to include the shed, making it a part of the same building.—The kitchen chimney is built nearly in the center of this building, has a large open fire-place, and has a good hight above the roof. All floors are of 1 × 4½-inch tongue and grooved pine flooring, close laid and blind nailed. All rooms in the main building and wings are hard-finished upon two coats of brown mortar. All work usually painted has two coats of good paint. The roof gutters are made as shown in the *American Agriculturist* for May, 1875.... **Estimate:**

8,000 Bricks in piers and chimneys, furnished and laid, @ $12 ₱ 1,000	$ 96.00
550 yards Plastering, @ 33c. per yard	192.50
5,054 feet Timber, @ 2c. per ft. viz. Sills, 4x8 in. x261 ft. long. 32 Beams, 2x8 in. x21 ft. long. Ties, 4x6 in. x261 ft. long. 4 Posts, 4x7 in. x22 ft. long. Plates, 4x6 in. x 92 ft. long. 1 Piazza Sill, 3x8 in. x230 ft. l'g. 4 Hips, 3x8 in. x17 ft. long. 1 " Plate, 3x8 in. x206 ft. long. 56 Beams, 2x8 in. x14 ft. long. " Beams, 2x6 in. x384 ft. long.	101.08
50 Joist, 3x4 in. x13 ft. long, @ 16c. each	8.00
300 Wall Strips, 2x4 in. x13 ft. long, @ 13c. each	39.00
370 Siding (6-inch clap-boards), @ 18c. each	66.60
170 Hemlock Boards, @ 16c. each	27.20
240 feet Cornice bracketed, @ 20c. ₱ foot	48.00
208 feet Simple rear Cornice, @ 8c. ₱ foot	16.64
38 squares of Tin, @ $8 ₱ square	304.00
6,000 feet of 1x1½ T. & G. Flooring Pine, @ 4c. ₱ foot	240.00
24 Piazza Columns (complete), average @ $1 each	24.00
1 Stairs complete, $60; 31 Windows, @ $10, $310	370.00
20 Doors, @ $9, $180; 2 Mantles, $50	230.00
Sinks, Pumps, and Wash Tubs	22.00
Closet finish, $12.00. Nails, $25.00	37.00
Painting, $150; Carting, $30	180.00
Boards for outside Casings $30.40; Incidentals, $67.58	97.98
Carpenter's Labor	200.00
Total Cost, complete	$2,300.00

The Angora Goat.

BY R. PETERS, ESQ., ATLANTA, GA.

INTRODUCTION INTO THE UNITED STATES.—During the administration of President Polk, the Sultan of Turkey requested that a suitable person be sent to that country to experiment in the culture of cotton. Dr. James B. Davis, of S. C., was selected and commissioned to perform this important service. On his return, in 1848, the Sultan, desiring to reciprocate the courtesy of the President, caused nine head of the choicest fleece-bearing goats in his dominions, to be selected and presented to Dr. Davis. These doubtless were selected from the herds of Angora, a district of country lying among the Taurus Mountains, which traverse Asiatic Turkey, and which derives its name from its principal city, situated about two hundred miles east of Constantinople. In the year 1854 I visited the farm of Dr. Davis, near Columbia, S. C., and found his stock of pure-bred Angoras, (these goats are called by the Arabs *Chamal*, or Camel-goat, meaning "soft," or "silky,") to consist of seven females and two males. Besides these he had one pure-bred Thibet ewe, several head of one-half Thibet and one-half Angora, and quite a number of grade females, bred from the common short-haired ewe goats of the country, and his Angora bucks. I purchased all the pure-bred Angoras, and several of the Thibet-Angoras. Dr. Davis had fallen into error as to the native country of his goats; and, believing them to be *Cashmere*, quoted their fleeces as being worth from six to eight dollars per pound, while in reality they were Angoras, whose fleece, known to commerce as "mohair," has been an article of import into Great Britain and this country for years, and held at from sixty cents to one dollar per pound.

MALE ANGORA GOAT.—*Belonging to R. Peters, Esq., Atlanta, Ga.*

CHARACTERISTICS AND HABITS.—I have owned Angoras selected from six distinct importations from Asia, and have found them to differ greatly in size, fleece, and horns, and the shape of the ears. It is easy to trace several varieties of crosses in many of the importations, occasioned, doubtless, by the fact that stock-breeders, in their native country, are ignorant of the system prevailing here, of breeding up from point to point—and more generally to the admission of stray bucks from distant localities into the various flocks. In fact, it may be safely asserted that we have in this country, any quantity of grade goats far superior to many that have been imported. In the absence of any other standard than that suggested by my own judgment, founded on my experience with these valuable animals, I have for twenty years observed the following rules in selecting a stock buck. 1st. Pedigree dating back to ancestors imported from Asia. 2nd. Weight and length of the long, silky, ringletted, white fleece, and its freedom from kemp and mane on the back and neck. 3d. Form, size, and vigor. 4th. Long pendent ears, and upright, spiral horns.

By a persevering and studious adherence to this system of selection, I have obtained a flock of great uniformity. The Angora is a hardy, industrious, and nearly self-sustaining animal—subsists in its Asiatic mountain home almost entirely by browsing—and may be classed as herbivorous. Being active and vigorous, they roam over wide ranges of wild, rugged country, in search of food, utilizing and giving value to worthless vegetation refused by most other animals, and will feed and fatten double the distance from water that sheep can, as they travel much faster and can endure more. The Angora seems not to succeed well in the Middle and Eastern States where they are imprisoned (as it were) in small enclosures, and kept on grass in summer, and in closed barns in winter. Although from a locality on the fortieth parallel of latitude, north, they thrive best below that line on the Atlantic coast, though they do surprisingly well on the Pacific coast, as far as introduced, but especially in California, New Mexico, Colorado, and Arizona, whose climate and topography is said to closely resemble that of their Asiatic home, with its wet and dry seasons. It can not brook—scarcely endure — confinement, but loves to roam at will over the highest mountain peaks, thriving and yielding its rapid increase of progeny, and its ringletted, silky fleece, where other stock will starve. It is a singular fact that while the Angora will live in the snow all winter, in the southern latitudes, and do well on browse, they will die in a northern latitude, housed and fed, or in a very wet climate. Efforts have been made to acclimate them in England, and signally failed; while in France, after an expenditure of $350,000, they are likely to succeed in but one locality of limited extent. If not sooner sheared, the Angoras shed their overcoat of "Mohair" in March or April of each year. Their winter coating then grows slowly until about July, when the "mohair" starts and grows very rapidly, until January, when it gains its full growth, averaging about nine inches in length. The Angoras live to a greater age than Merino sheep, and are more prolific. I have three ewes in my flock, numbered by the Randall system of notches in the ears, so there can be no mistake as to their identity. No. 53 was dropped in 1861. She has raised 21 kids, brought her first in 1862, and her last in 1875, is now very feeble and on the decline. No. 68 was dropped in 1862, and No. 69 in 1863, both brought fine kids in March, 1876, at the age of 14 and 13 years.

FEMALE ANGORA GOAT.—*Belonging to R. Peters, Esq., Atlanta, Ga.*

AVERAGE ANNUAL CLIP.—Pure-bred Angoras will yield from five to eight pounds of "mohair" per clip, with one notable exception of a ten-pound clip from a celebrated no-horned Costamboul buck, the property of Mr. Landrum, of California. The general uniformity of the yield is indicated by the fact that in 1854 I sheared six and a-half pounds of "mohair" from a buck of the Davis importation, referred to above, and in 1876 I sheared exactly the same quantity from one of his descendants.

(TO BE CONTINUED.)

Among the Farmers.—No. 9.

BY ONE OF THEM.

It may seem strange, or rather like a too oft told tale, to read in October about the drouth of August, but as I walk over the parched grass, which crackles under foot, or poke about after a shower in the grain stubble, to see if I can find a single plant of red clover or of timothy out of the many which expanded their seed-leaves, or shot up their delicate spears, under the benign influence of May, or watch at night-fall to see if the dew and the moist sea-breeze will unroll the close-curled corn, I can think of hardly anything else. We had one blessed and all-blessing rain near a fortnight ago, and upon us and our thirsty acres it came down gently and tenderly at first, and then, after the surface was moistened, and the shingles swollen, and when all nature waited with open, open bosom, how it was poured out!—Not with blinding flashes and crashes of thunder, not in floods and with tempestuous winds—but quietly and bounteously, as it were lovingly—all day and all night, and longer—every thing seemed to give thanks—even many men; but some said, "too late to do much good."—"'t won't save the corn."—"It all stopped in the soil, and won't help the wells any."—There are folks who would not be suited, if they had their heart's wish as soon as they knew it. Their wants would grow faster than their wishes, and they would always find something to grumble about.

Even the morning greeting of neighbors develops character, and it is not hard to "spot" the grumblers. "Good morning, neighbor! How are you to-day?"—"First rate; how's yerself?"—or, "Bully."—That is one class—cheerful and positive. Another probably answers the same greeting, "Can't complain."—As if to complain was the great privilege of life, and as dear to the heart, as the right to grumble is to a Jack Tar.

Fine, Deep Tillage.

In some years simple tillage does not seem to be of great use. We can turn over a good sward, furrow out, and plant corn, and with a little fertilizer in the hill, and once or twice horse-hoeing, it does very well. All the better it would be, if a good dressing of manure were plowed in when the sod was turned over. In dry seasons, how different! tillage tells wonderfully, and the neighbors are quite agreed that it has never shown such results as this year.

Corn on Stubble Land,

or twice on the same ground, does far better than on sod. Potatoes were under suspicion this spring, and no one about here planted so many as usual; the result was, we hardly knew what to do with our last year's corn ground. Much of it was planted again with corn, and has uniformly stood the drouth well, and will give nearly a full crop, against half a crop on sod. I attribute this to two facts. One, that the soil which had been under the plow one summer, and exposed to the frost one winter, was in a finer condition of tilth, than that which was but once plowed, after lying for years in grass; the other, that the drouth came on so early that the roots of the corn were still only in the sod, and had not formed connection with the subsoil, where no doubt there was a store of moisture, which would have been of great benefit. We had not rain enough after corn was planted, to rot the sod, and the heat of June and July was so severe, that it was dried out with the soil and crops upon it.

Peaty Soils.

When black or peaty soils—those which contain a great proportion of organic matter in that condition of arrested decomposition, which renders them of all sour soils the sourest in a wet season, and if in good tilth, and in a dry season, of all sweet soils the sweetest—when these soils, I say, after having been a year or two under culture, are well tilled, they become fine as dust, and apparently dry as ashes, but any thing almost will grow well on them, corn, oats, cabbages, roots, potatoes for feeding, etc., and it is wonderful to see how obviously the moisture is absorbed from the hot air, and conveyed down deep into the soil. On even such soils, corn curled in the day, but opened broad and fresh every night, so far as I observed. But it was tillage that did it. On that which was not cultivated, but left lumpy, and not frequently stirred, the crops suffered worse than on other soils. No doubt the black color made it hotter, and if hotter, then surely dryer by day, and of course, unless in a state of minute subdivision, no moisture would be absorbed day nor night.

Summer-Fallowing to Kill Weeds.

As I said, we have not planted so many potatoes as usual, and some of us—one near neighbor in particular—has been summer-fallowing with the intention to follow with roots next year. All the first part of the season the crops of weeds would start as soon as the ground was plowed and harrowed, and I notice both on his land and on mine that plowing alone is not enough—only a few weeds start after plowing, but after a good harrowing, in one week weedy spots would be green with them. In moderately dry weather, and upon soils that would not bake to form a crust, I am inclined to think the harrow might be well followed by a roller. When there is moisture in the soil, rolling tends to keep it there, and pressing moist soil around seeds causes them to sprout. After the drouth became serious, weeds ceased to grow; no more germinated, and even some of those which had a good start stood still, so it has been on the whole a grand weed-killing year.

Where the good Crops are.

In a season like this, and may we never see another, it is not hard to tell beforehand where the good crops may be found. They will not be on farms or in gardens where the proprietor goes to the city every day. Plowing and hoeing among baked clods, and in dusty ash-heaps, is discouraging. Weeding mangels and carrots, even though you do not begin until four o'clock in the afternoon, when you see every plant where the earth is disturbed wilt down as limp as a rag within ten minutes, takes the pluck out of men, and so there are plenty of discouragements that keep men from hoeing, plowing, and the general tillage of growing crops. It is where men do their own work, are not set back by trifles, and manage by working late into the evenings, and on cloudy days, to get clean and well tilled crops. These are even now looking very well in deep soils, and not badly anywhere that I have seen. Tomatoes show this remarkably, melons and squashes not less, peas and beans also, and with potatoes it makes all the difference this year between half a yield and next to none.

Pork.

How many people inveigh against pork! "As unfit for a Christian to eat as it is for a Jew."—"The source of all the scrofula in the country."—"Unhealthy in every form, and promotive of all sorts of diseases."—Forty years of pork-eating has led me to a very different view of the matter. No form of animal food, except locusts or grasshoppers, is so easily reared. No flesh of any domesticated animal is so flavorous, none so rich, so tender and delicate, none so white and beautiful, and none takes salt and smoke so well. The fat can well be substituted for lard for most uses. Fresh, or salted, or smoked, or rendered, it is unequalled. Pork is no food for babes—that I admit, nor for sedentary dyspeptics. It may be too hearty for delicate females, but it is real *man's* meat. There is no disagreement between salt pork and hard work; if anything goes wrong, depend upon it, the pork is not seasoned with sweat enough.

Pork and Apples—labials, linguals, and palatals, unite in one thrilling cord at the bare mention. It matters little how they are combined—the pork and the apples. Roast pork and apple sauce, pork and apple dumplings, fried salt pork and fried sour apples, boiled salt pork and baked sweet apples. These are farmers' stand-bys and luxuries, and alternating with boiled, baked, broiled, or fried bacon, fill up admirably between the twice or thrice a week that the butcher calls. Besides all this, as if this was not enough almost to make a man take off his hat to a nice porker—and certainly to a three hundred pounder; besides all this, no quadruped reaches maturity so rapidly, none multiplies so fast, none makes so good use of the food fed to it, and none fattens so readily at all ages. I fell in with

General Kilpatrick

the other day, and had an interesting talk with him about his farm horses, grade Short-horns, and pigs. I'll not attempt to repeat it, for I hope some day to visit his farm, and can then make a better story of it; but as an illustration of the amount of pork a good feeder may make, will mention that he kills at four mouths old almost uniformly, which is just as soon as the pigs will weigh 100 pounds, and shipping to New York, his returns average 100 dollars a month, about equally divided throughout the year, and is the best return that he can get for his skim-milk and corn. Now, 100 lbs. for a porker four months old is no unheard of weight; such pigs are not very rare, but when a man breeds and feeds so as to make it a uniform thing, it is remarkable. I think it was the General who said deplorisgly

How little our People know about the Use of Grade Animals.

There is, and there ought to be, a great deal more profit to ordinary farmers in raising grades—especially grade cattle, grade sheep, and grade pigs—than in raising thorough-breds; yet, how few know it. Kilpatrick's pigs are grades of small, compact, thorough-bred sires, and out of strong, deep milking sows. In the same way, by using a first-class Short-horn bull with excellent common cows, he secures grades of extraordinary excellence.

Cutting Brush.

There is something terribly discouraging about a protracted drouth. It seems as if work was of no use, and it is so very hot at mid-day that our people seem to take things rather easy. Men hired by the day are not so closely followed up, and with one consent extra long noonings are taken, and the time is not made up. The result is, work drags. The corn is not properly hoed and "laid by" in good season. Haying holds on. There are corners, and swampy spots to cut long after all should have been done and such work out of the way. The result of course is that brush-cutting is neglected just in the most killing time. The time to cut elders and alders, as well as bayberry and huckleberry, and hardhack, notwithstanding the late Mr. Greeley's advice, is just when a summer drouth is fairly established. There are very few things that can recuperate from the shock. I was particularly impressed with this the other day while taking

A Horse-Back Ride to Town.

Twenty-five miles is an unusually long ride for me, and so, wishing to reach New York by business hours, I started at day-break and went slowly. My journey lay through a part of the country mostly held either by large landowners who have inherited it, or by speculators. It is all within easy reach of New York, and was valued a few years ago at from two to ten times its agricultural value. Here, you may depend, was use for the bush-hook and hatchet. The whole country for several miles near the suburbs of the city, seems given up to nature. Where well cultivated farms were a few years ago, there is now a wilderness of cedars and white birches, on the poorer soils, and all sorts of hard wood growths on better land. I saw one recent clearing; the brush having been cut off within a month, was still lying in heaps ready to be burned, and it was surprising to see how little had grown a second time. I turned in and had a good look at the field. A few little sassafras shoots were struggling up, looking pinched and poor; chestnuts were sprouting again with some vigor, and blackberries hardly at all. The ground was so dry and baked out that there seemed no more vitality left in all surface-rooted shrubs, and only trees sending deep tap-roots into the ground, survived the dispensation.

When I could do so without making too great detours, I left the highway and took the back roads, but even then I could not avoid the well nigh

Omnipresent Tramp.

He was seen tucked under hedge-rows along the turn-pike, just waking, perhaps, from half-a-night's

rest. He was slouching under trees, begging at the farm-house doors, frightening the children at the spring, making friends with the watch-dogs, or shuffling along the road, with that peculiar gait, the bundled up feet, the hang-dog look, the appearance of being an athlete or a panther in disguise, or a maniac undisguised, that is peculiar to the breed. One thinks of Sing Sing, and if he has ever visited that famous prison, and seen the familiarity that exists, or did exist, between the keepers and the kept, and seen the plainest and most obviously necessary or beneficial laws broken by both, and even, as when I was present a few years ago, by one of the State Inspectors, appointed by the Legislature from their own number, it would hardly surprise him to know that there had been a general stampede or flight of New York jail-birds, and that like a cloud of locusts they had settled upon this part of New Jersey. At present we are having quite enough of this sort of thing, and it would take but a breath to rouse a burning indignation among farmers and country dwellers, that would make it hot for the tramps. They are not prepossessing, not agreeable people to meet, not adapted to make the walk to and from school pleasant for little girls. We associate with them stories of kidnapped children—think about Charlie Ross, of thefts in the neighborhood, (Mr. Wood lost his best set of harness not long ago), of our own two score of fat pullets taken off the roost, and fairly grudge the bowl of skim-milk and slice of ham and bread that we give more from fear than from charity. When they refuse the milk and ask for *coffee*, and want it hot, that is too much. Then we know they have milked the cows in the night, and are at our door only to see if there are any spoons lying about. So somehow the dog is unchained, and is with great difficulty restrained from doing actual violence, and the tramp is ordered off to the road; his milk poured into the swill barrel, and his slice of bread afterwards picked up at the gate.

Protection Societies.

We have an admirable law in New Jersey, which I believe is of general application throughout the State, which permits the citizens of any township to organize a "Protection Society," which, under the authority of the Governor and County Court, may appoint marshals with powers similar those of city police, while the officers have powers like those of Justices of the Peace. Some of these societies have exceedingly complete detective systems and detective officers, amateur detectives, so to speak, who have been very successful, both in preventing crime and in bringing criminals to justice. I have been told that in the township of Englewood no tramp is allowed to sleep or to pass the night on the highway, or to be upon the highway after nightfall, but is promptly provided with a lodging at a station-house in the village, which he pays for by work on the road the next day, and if he is not civil, and does not work well, he is "sent up" to the county jail for a longer or shorter term. This naturally leads the tramps to prefer to go round. Were such societies more general, the tramp problem might quickly find solution, at least in this State, and the click of the stone hammers would have a sweetness added to its tone, which it never before possessed. We greatly need some cheap and efficient means for providing

Broken Stone for Roads,

and who knows but Providence is kindly offering us in the despised tramp a long looked for blessing?

Blake's Stone-crusher, like his nut-cracker, is a triumph of art, but it is a ponderous piece of mechanism, needing a steam engine to run it; and as some of the corn huskers have failed simply because it costs more to haul the corn to them, and cart the stalks and corn away again, than to husk the corn where it grew. So for our common roads it would be cheaper to break the stone on the road, than to use the steam crusher. I think any town might well afford to give a man a good lodging with supper and breakfast, for breaking a cubic yard of granite or trap-rock into pieces as big as butternuts, and I concede that the stone might be measured after it was broken. It matters not how long it takes a man to do the job, time is of no account to a tramp; he has too much of a good thing, and we do him a real favor to help him dispose of a part of his stock profitably.

I despair of ever seeing fine, broken stone appreciated for road-making and road-mending. Every road should have a well drained hard bottom, and this is usually not hard to secure. Every hard-bottomed road should be dressed with nothing but fine broken stone. It will pack under wheels and the tread of teams like a floor, and will need so little repair, that with nearly perfect roads our highway tax would not be greater than now. Full loaded teams might always pass; pleasure driving would be a happiness; wagon-makers' bills would be reduced by half, and yet the wheelwrights would make a better living, because so many more vehicles would be in constant use. I believe sometimes in taking a Utopian view even of the tramp question.

How to Save and Keep Manure.

There is no question more frequently or seriously considered by the farmer, than how he shall get, keep, and spend an adequate supply of manure; nor is there anything about the farm which is of greater importance to its successful management, than the manure heap. There are few farmers now left who pretend to ignore this feed for the land; and few localities, even in the newer Western States, where manure now is thought to be a nuisance. We have gradually come to the inevitable final end of our "virgin farms," and have now either to save what is left of their wonderful natural fertility, or to restore them slowly and laboriously to a profitable condition. We have reached the end of our tether, and are obliged to confess that we have trespassed over the line which bounds the territory of the locust, or have improved the face of the country so much, that the protecting timber being removed, the water supply is becoming precarious, and springs, brooks, and rivers no longer flow as they did heretofore. To some extent the tide of emigration, which has flowed westward so many years, is now eddying or even ebbing, and the cheap, worn lands of the East are finding purchasers, who undertake to bring them back to their former condition. At the same time Eastern farmers are discovering more and more certainly that they must increase their crops, and make one acre produce as much as two have heretofore done. The only way in which either of these classes can succeed, is by keeping sufficient stock to manure their farms liberally; to feed these animals so skillfully and well, that they shall pay for their feed with a profit, and in addition leave a supply of rich manure, with which the soil can be kept in a productive state, and to save and use the manure with such care that no particle of it be lost. It is not every farmer who can procure all the manure he needs; but very many can save what they have, with far greater economy than they now do; and this, although it may seem a question secondary to that of getting manure, is really of primary importance; for by using what one has to better purpose, he opens a way to increase his supply. We have found this to be the case in our own experience, and by strict attention to saving and preserving every particle of manure in its best condition, we have succeeded in so enlarging our supply of fodder, that the number of stock that could be fed was largely increased each year, and very soon it was necessary to go out and buy animals to consume the surplus. To bring a farm into improved condition, there is no cheaper or more effective method than this.

The ordinary management of manure, in open barn-yards, where it is washed by rains, dried by the sun's scorching heat, and wasted by every wind that blows, is the worst that is possible. In this way half or more of the value of the manure is lost. By figuring up what it would cost to purchase a quantity of manure equal to what is thus lost, the costliness of this common method would be discovered, and the question how much could be afforded to take care of the manure would be settled. When properly littered, one cow or ox will make a ton of manure every month, if the liquid as well as the solid portion is saved. Ten head would thus make 120 tons, or 60 two-horse wagon loads in a year. A pair of horses will make as much manure as one cow, or 12 tons in the year. A hundred sheep, if yarded every night and well littered, will make 100 tons of manure in the year, and ten pigs will work up a wagon load in a month, if supplied with sufficient coarse material. The stock of a 100-acre farm, which should consist of at least 10 cows, 10 head of steers, heifers, and calves, a pair of horses, 100 sheep, and 10 pigs, would then make in the aggregate, 316 tons of manure every year, or sufficient to give 12 tons per acre every fourth year. If this were well cared for, it would be, in effect, equal to double the quantity of ordinary yard manure; and if a plenty of swamp muck could be procured, at least six hundred tons of the best manure could be made upon a 100-acre farm. If this were the rule instead of a rare exception, or only a possibility, what a change would appear upon the face of the country, and what an addition would be made to the wealth of the nation!

Pits for Keeping Manure.

The first requisite to the economical saving and handling of the manure, is a manure pit. The size needed can easily be calculated, by allowing one cubic yard for every ton to be made. For 600 tons of manure made yearly, a pit of a capacity of 300 cubic yards should be made, as it would be emptied twice in the year. A pit 30 feet long, 15 wide, and 4½ feet below the surface, would hold 300 tons,

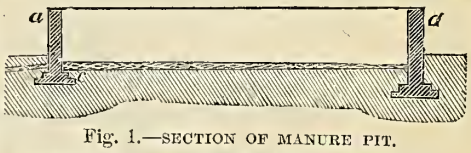


Fig. 1.—SECTION OF MANURE PIT.

if the contents were heaped 4½ feet above the surface. The simplest manure pit is a mere hollow in the ground, which prevents the liquid portion from flowing away from it in odorous streams here and there, but permits it to sink into the ground and escape. The first improvement consists in making the hollow water-proof, so as to retain the liquid part. This may be done by cementing the bottom of the hollow. The next improvement would

Fig. 2.—SECTION OF PIT WITH DRAIN IN CENTER.

be to build a retaining wall of brick or stone, to hold the manure heap, and to make a drain by which the surplus liquid matter might be carried off into a cistern. This method, which is very cheap, simple, and effective, is illustrated at figure 1, in which the walls are shown at *a*, *a*, and the drain by the dotted lines below the surface of the ground. A further improvement may be made, as shown at figure 2, by sloping the bottom, *c*, *c*, from each side to the center, inside of the retaining walls,

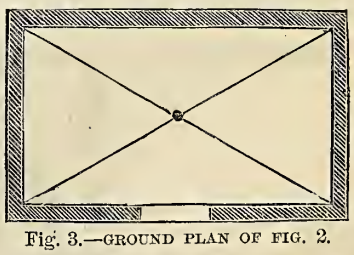


Fig. 3.—GROUND PLAN OF FIG. 2.

a, *a*, and placing a drain at the lowest point, to carry off and collect the liquid manure. At *b* is an opening at either of the end walls, through which a cart or wagon may be driven, to unload or remove the manure. These openings may be left open or closed by gates. At figure 3 is shown the ground plan of this manure pit, with the opening in the walls referred to. If desired, there may be two

openings, so that a wagon may be driven clear through. A further enlargement may be made by arranging the pit as shown at figure 4, which represents a cross section of it. There are the retaining

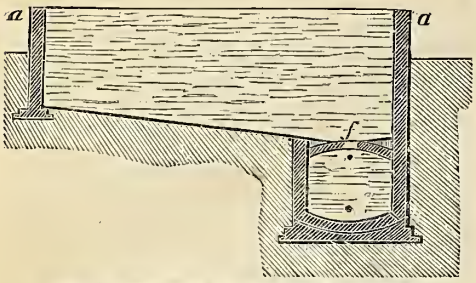


Fig. 4.—SECTION OF PIT WITH CISTERN.

walls, *a*, *a*, as before, and the pit is sunk to a convenient depth beneath the level of the ground, the floor being cemented and sloping to the rear, where the cistern is placed. The cistern is arched over, and an opening, seen at *f*, fig. 4, to be covered with an iron grating, is made in the arch, and the floor of the pit over this cistern, slopes each way to the grating, as seen at *f*, in figure 5. This figure is a ground plan of the manure pit, the open space shown at the front being the gateway or entrance.

A point for serious consideration is the covering of the yards or manure pits. The excellent designs here given, were made by Mr. R. Scott Burns, the eminent English agricultural engineer, and were recently published in "The Country," an English rural journal. Although originally intended for the circumstances of English farmers, there are no points in which they are not equally applicable to our own necessities. With regard to the covering of the manure, we consider that if English farmers find this needful or economical, it should be much more so with us. As a protection against the rainfall, we need it much more than they do, for the average rain-fall in England is but 30 inches, against 45 to 50 here, and our rain descends sometimes in torrents, while their's consists mostly of frequent showers. If, as a protection against drying and baking by the sun, a cover is needed, then with our more ardent summer's heat, we should require it the more. The frequent adoption of manure cellars beneath the barn or stable is a substitute for covered yards or pits, the wisdom of which is certainly questionable on the score of healthfulness and cleanliness, and many farmers may have reason to charge the loss of valuable animals by unexpected and unexplained disease, to their manure cellars. The covering of the manure pit may then be considered as advisable whenever or wherever it can be afforded. This may be done in as simple a manner as possible, by a plain board roof, supported upon posts, or by a more costly building, which may be

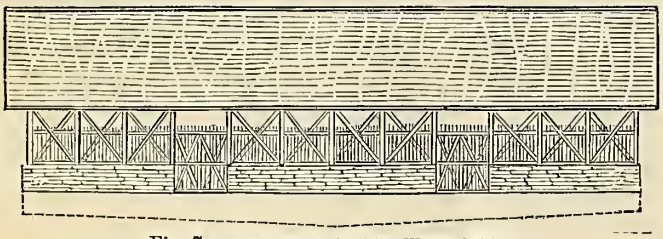


Fig. 7.—SIDE VIEW OF PIT WITH SHED.

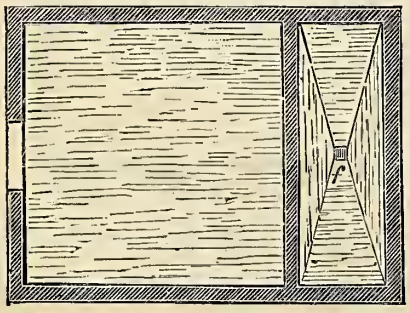


Fig. 5.—GROUND PLAN OF FIGURE 4.

made to serve at times the purpose of an open feeding shed as well. The roof should in any case be provided with eaves-troughs and waste pipes, the flow from which could be turned upon the manure, if desired, or conveyed away by drains when not needed to moisten the heap, or to dilute the liquid manure. At figure 6 is given a cross section of a covered pit, suitable for a large farm, where everything is carried on with ample means, and a view to the greatest economy and profit. In farming there can be no profit without outlay; seed must be sown and the soil fertilized before a harvest is returned; and one of the greatest drawbacks of American farming, is inadequate capital to invest in the enriching of the soil. Therefore we do not believe the cost of such a structure as this to be at all an extravagant or unnecessary outlay upon any otherwise well appointed farm. At any rate the plan may be modified to suit a slender purse, or the ideas of a cautious farmer, who likes to feel his way at first. The pit and cistern differ in no way from those last described, except in form. Upon the retaining walls timber sills are laid, into which the posts are framed. The structure of the frame at the end is clearly shown in the engraving. The dotted lines are intended to indicate a method of framing differing from that shown by the unbroken lines. These latter serve to give a stiff and strong

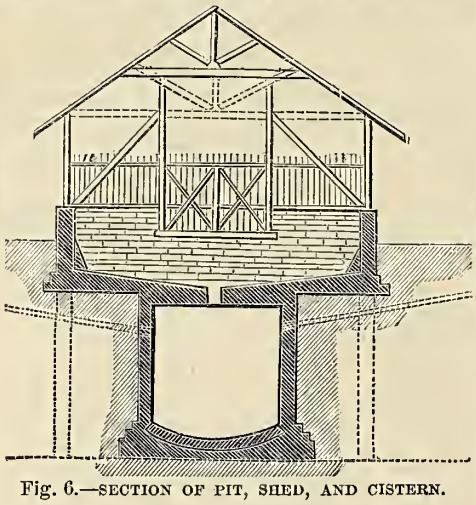


Fig. 6.—SECTION OF PIT, SHED, AND CISTERN.

frame with a high elevation, sufficient to admit a load of straw beneath the collar beam. The entrances, of which there are or may be six, are closed by gates. At figure 7 the side view of the shed is given; the dotted line representing the floor of the manure pit. The dotted lines in figure 6 show the position of the drains from the stables and feed-sheds, by which the liquid manure is carried off. It is obvious that these plans are intended to be used in connection with a system of saving and using the liquid manure. In regard to this we can now only say that any farm carried on under a system in which the saving of liquid manure is neglected, can realize only a part of the profit it might be made to yield, and that its owner ignores one of his most valuable resources.

THE MANUFACTURE AND USE OF FLOUR PASTE.—The manufacture of paste consumes a considerable quantity of flour, which must be of at least fair quality. In the city of New York alone 150,000 barrels of paste are made and used yearly. The paste is made by sifting the flour and passing the lumps between rollers until the whole is fine. It is then mixed with water and boiled in steam-jacketed vats which hold about three barrels each. The paste is used by makers of pasteboard, some of whom consume six barrels per day. Bookbinders and machine-folders of periodicals and pamphlets use a paste of extra good quality specially prepared for the purpose. Shoemakers and bill-posters use a very inferior quality. Paste is also used in the manufacture of rope, twine, carpets, suspenders, pocket-books, and a very large quantity is used as "size" in various textile manufactures. On the whole the consumption of flour in the arts and manufactures, in the United States only, amounts to considerably more than a million barrels yearly, requiring 5,000,000 bushels of wheat for its production.

A Method of Hanging Hogs.

An easy method of hanging a hog or a beef, is by

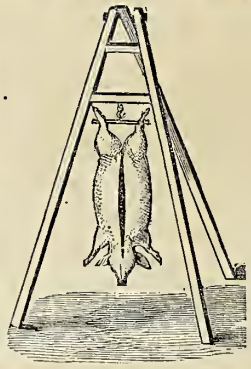


Fig. 2.—TRIPOD SET UP.

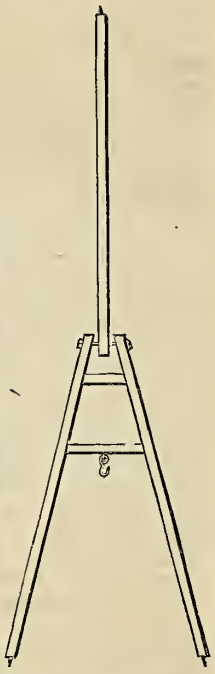


Fig. 1.—TRIPOD.

the use of the tripod shown in the accompanying engravings. It is made of three pieces of 3 × 3 oak scantling, 6 feet long, connected at one end, in the manner shown, by means of an iron bar one inch thick, passed through a hole bored in each piece. The two outside pieces are fastened together by two cross pieces, bolted to them, so that they are spread at the bottom sufficiently, which would be about 3 feet. A hook is fastened to the lower cross-piece, upon which the hog is suspended. To hang the hog the frame is laid upon the ground with the hog between the outside legs, the third leg being drawn backwards, as shown in figure 1. The hog being hooked by the gambrel stick to the cross-piece, the frame is lifted up, and the hinder leg is spread out so as to support it, as shown at figure 2. The frame may be lowered easily when the hog has to be taken down, and as the frames are cheaply made, and occupy little room, it will be well to have several of them. They may be made to serve other useful purposes.

Bins for Storing Potatoes.

There is always more or less loss of potatoes when they are stored upon the cellar floor. The dampness of the floor, and the impossibility of ventilating the bottom of the heap, cause decay, which spreads through the mass, and it gives off a disagreeable odor. Potatoes are not necessarily offensive, when kept in a cellar, but are frequently made so by want of care in storing them. We have seen a plan of putting them in bins, made of strips of wood with spaces between them, in which they were kept in perfect order, without any loss by rot, or any moldy, earthy smell arising from them. The

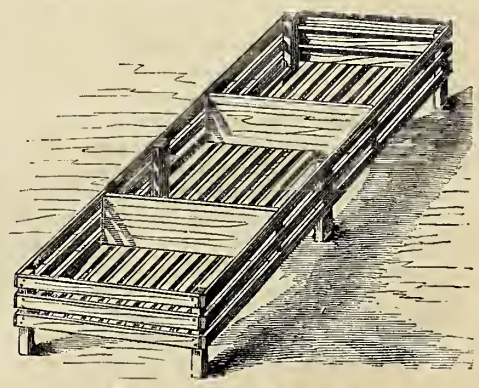


Fig. 1.—BIN FOR POTATOES.

bins are of two kinds. One, shown at figure 1, is suitable for storing a small quantity, and may be

divided, so as to keep different varieties separate. Being made of strips, thorough ventilation is secured from the bottom upwards. When a larger quantity has to be stored, the bins are made on the plan shown in figure 2, in which strips are used as before, but the bottom is made sloping forwards,

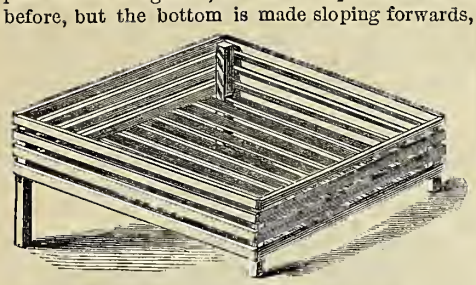


Fig. 2.—SECTION OF POTATO BIN.

and a number are made which fit into each other, so that they can be piled up, as shown in figure 3. The bottom bin is placed upon legs, which raise it from the ground. When the bottom one is filled with potatoes, another bin is placed upon it, resting upon short feet at the corners upon the ends of the posts of the lower bin. The bins are thus locked together so that they can not be pushed out of place. Any number may be used that may be

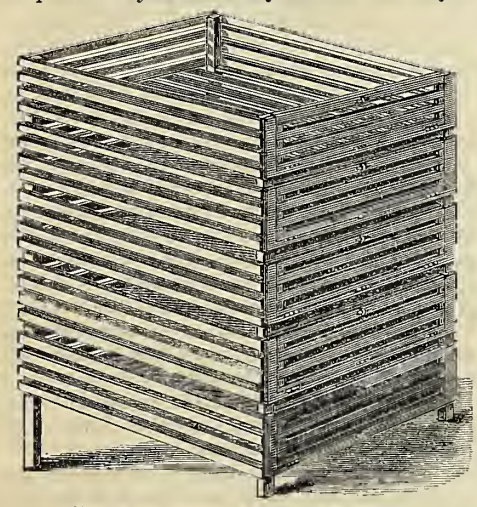
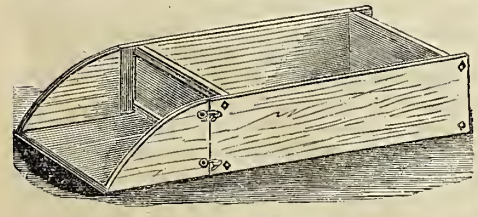


Fig. 3.—SECTIONS PILED TOGETHER.

found desirable. To remove the potatoes as they may be needed, the front of each bin is made to open upon hinges placed at the bottom. The front may be dropped down altogether, or only partly opened, when the potatoes slide down to the front. By having a movable spout, the potatoes may be guided into bags held to receive them. The doors at the front are fastened by means of a staple and a pin of wood, as shown.

Unloading Corn in the Ear.

Several correspondents have sent us descriptions and sketches of a plan for unloading corn from a wagon-box, which is an improvement upon the method described in the *American Agriculturist* for August. It is as follows; an addition is made to the wagon-box, as shown in the engraving. This



ATTACHMENT TO WAGON-BOX.

is movable, and is fastened, when in use, to the sides of the wagon-box by hooks, as shown in the illustration. When the corn is to be unloaded, this addition is hooked on to the box, the tail-board is removed, and space is provided for scooping up of the corn ears. When the corn is unloaded, the piece is removed, and may be hooked on to another wagon, the same piece thus serving for several. This is now a seasonable contrivance, and is very easily and cheaply made.

A Pen for a single Pig.

Many persons living in country towns, and who have gardens from which there is considerable waste produce, find it economical to keep a pig which will consume the garden refuse, as well as that from the house. In the country the "poor man's pig" is a means of saving several dollars each year, from what would not only go to waste, but would in time become a collection of offensive matter; and with those who—although not poor—still study economy in their domestic arrangements, a yearly supply of bacon and a pair of hams that cost next to nothing never come amiss. If it were not that from neglect and mismanagement the pig-pen is generally a blot upon the rural homestead, a sink of filth, and a source of foul odors, the keeping of a pig would be quite unobjectionable even in a garden. But the pig itself would never have become possessed of the disagreeable character which it now has, had it been given a favorable opportunity of distinguishing itself as an animal loving cleanliness rather than filth, and had it been provided with a clean, convenient pen, and clean wholesome food and drink. The fact is that a pig-pen, instead of being all that is disagreeable and disgusting, may be kept neat and free from bad odors, and indeed inviting in appearance, if the proper care is taken of it. There would then be no fear of infection from eating pork, and the meat might be made as wholesome and inviting as the flesh of poultry, which, if permitted, are as general foragers among filth, as pigs ever are. To remove all objection against keeping a household pig, there must be provided a proper pen of ample room, of solid materials, and which can be kept perfectly clean, well aired and free from vermin. The refuse must be frequently removed or deodorized by the admixture of dry earth. A plan for such a pen is here given. Figure 1 shows the elevation. It is ten feet square on the floor, and eight feet high to the eaves, the frame is made of light timber as follows: sills 4×6, joists 2×6, floor two-inch plank, studs 2×4, the plates of 1×6, rafters 1×6; the roof is of boards, covered with Johns' Asbestos roofing, and the walls of inch boards, battened, or of clap-boards. There is one door and one window at the front, and a ventilator in the roof. There is an open yard floored with plank at one side, 6 feet wide, leaving a door at the front which falls down and makes a platform for the first entrance and the final exit of the pig. The floor should be caulked tightly with tow or strips of cloth, such as "carpet rags," and saturated with pine-tar put on hot. The building is raised a foot above the ground, by which it is kept dry and free from vermin. The yard is boarded up tightly for about four feet, and at the side there is an opening three inches wide through which the litter and refuse is pushed with a scraper. The floor of the yard is made to slope slightly towards this opening, and should be kept covered with dry earth from the garden, which, when returned to it, would be a rich fertilizer. If a plenty of earth is used, there will be no offensive smell, and the pig will be found remarkably neat in its habits, keeping the inner apartments clean. If otherwise, the floor should be scrubbed with water and a broom, and a pailful of water should be thrown over the pig as an occasional bath. The floor plan is shown at figure 2. The door opens into a feed-room where the feed-bin and a half tub for mixing feed may be kept. The feeding-pen is at the front, and the sleeping-pen at the rear, and

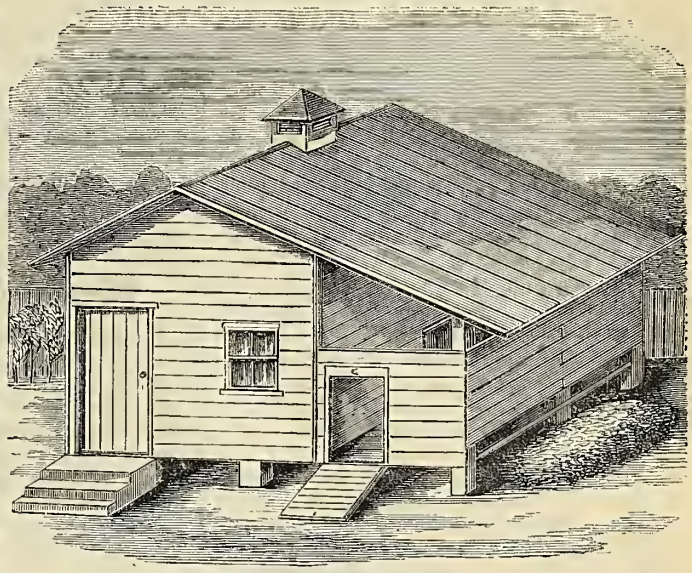


Fig. 1.—VIEW OF PIG-PEN.

this opens into the yard by a swinging door, which shuts of itself, and is shown at figure 3. At fig. 4 is shown the arrangement of the feed trough. A

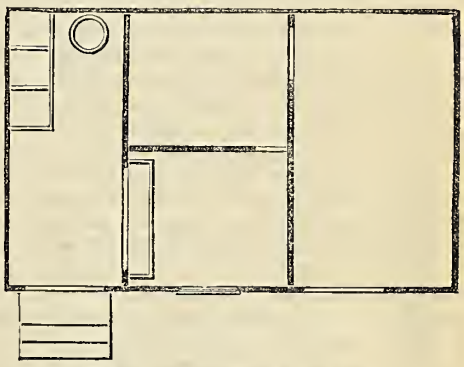


Fig. 2.—GROUND PLAN OF PEN.

sloping board guides the food into the trough through an opening in the partition from the feed passage, and a strong frame of cross bars is hinged to the partition and rests upon the trough, by which the pig is kept from rolling or lying in it. Such a pen, neatly built, and white-washed, will cost about $20; and two days' labor of any man or boy handy with tools, will be sufficient to complete it. If a half-floor is put up over head, just within reach, it will serve as a store-room for some garden tools and the usual "odds and ends" of a garden.

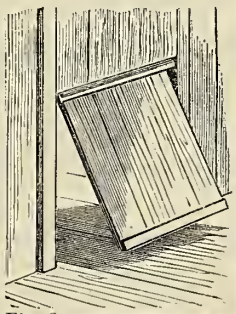


Fig. 3.—SWINGING GATE.

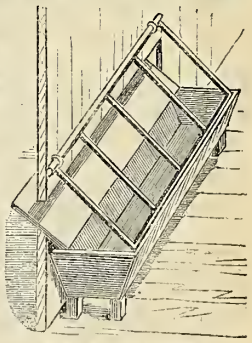


Fig. 4.—TROUGH.

PREPARATION FOR SOILING CATTLE.—It can not be doubted that soiling may be profitably carried on, especially upon dairy farms, although the practice involves extra labor. It is by labor only that the raw materials of the world are made useful, and the more labor that is *judiciously* expended upon anything, the greater the value of the result. If twenty cows can be kept upon the produce of twenty acres, by the extra work of one man, whose labor costs $200 for six months, there is clearly profit in employing the extra man. If 100 cows can be kept on 100 acres by the labor of five men continuously employed throughout the season, the resulting profit would clearly be greater than in keeping

20 cows without their labor. That one cow per acre can be kept on an ordinarily good farm by soiling, has been perfectly well established, but it can only be done by the employment of more labor than is usual under the ordinary system. But labor alone is not all that is needed. The skill and intelligence to direct the labor is equally necessary; and it is here where the majority of farmers who try the system fail. A preparatory course is almost always necessary, and the beginning is the most difficult part of the business. Careful preparation must be made, and the soil can only be brought up to a proper degree of fertility, for final success, by perseverance. Those who would make a beginning must commence at this season, the first crops to be fed must now be sown, and the preparation of the soil for the first succeeding crop must now be done, by plowing and manuring in readiness for early sowing in spring. There is no better guide in this business than the book entitled "Quincy on Soiling," which should be studied by all interested.

Hitching a Crib-Biter.

A correspondent who has a horse that is a crib-biter and windsucker, and which practices his vice when hitched to a post in the street, is recommended to try a hitching-rod, such as is here illustrated. It consists of a piece of hickory, white oak, or tough ash, about 24 or 30 inches long, thickest in the middle, where it may be an inch in diameter. A ferule with a ring is fastened to each end; in one ring a common snap-hook is fixed, and a short leather strap is passed through the other, by which the stick is fastened to the post. The horse thus hitched can not possibly reach the top of the post, to seize it with its teeth. In the stall such a horse should be hitched with two straps, one at each side of the stall, and of such a length, that he can not reach either side, to take hold of the rail or partition of the stall. If a swinging feed-box is used, such as is described in the *American Agriculturist* of January, 1875, and which, when not in use, is brought into the feed passage, leaving nothing inside the stall to take hold of, the crib-biter will be forced to suspend operations, as he cannot draw in the air or "suck wind," unless he has some projecting object that he can lay hold of with the teeth.

"OUR SPECIAL FOREIGN CORRESPONDENT."—Many of the agricultural journals, on the principle perhaps that imported goods are conceived to be most popular, have a "special foreign correspondent." Not the least curious thing is, that this "special" correspondent favors at least a dozen journals with precisely the same foreign letter, in which are gathered some of the strangest absurdities that are gravely printed from time to time, as something sufficiently valuable to be worth foreign postage at least. From one of the latest of these special communications, we learn that the leading French Zootechnist concludes after "an exhaustive examination," that the flesh of animals affected with the virulent blood disease known as "charbon," which is our "black leg," or carbuncular erysipelas, is fit for food, and farmers are advised "to slaughter such animals and rapidly prepare the meat for market." The probable and proper effect of such an act would be to land the farmer in the criminal's dock, to answer a serious breach of law, which in this country forbids the sale of diseased meat. We are also told that sour milk fed to pigs, produces the disease known as rachitis, or "rickets," which is an idea that is certainly foreign to all experience here; further, that horses have died from typhoid fever in consequence of feeding *near to* fields dressed with night soil from cities, and that "an inventor alleges to secure" a uniform temperature in churning cream, by using a double sheet-iron churn, with felt between the walls, all of which is a shining example of supreme nonsense.

HARVESTING MANGELS.—It is always preferable to get the mangels dug and put away in pits before severe frosts occur. But it should not be forgotten that the more mature the growth the more nutritious are the roots. To top the roots for the sake of feeding the leaves, is injurious. The leaves are necessary for the full development of the roots, and should be left upon them until they are ready to be lifted. If some supplementary fodder is needed for cows or sheep, it would be better to pull some of the roots before the main crop is harvested, than to denude any part of it of the leaves.

Effects of Artificial Fertilizers.

A recent experiment made upon a farm in England, under the directions of Dr. A. Voelcker, is interesting, as showing what we have frequently stated from our own experience, viz., that Peruvian guano is the most effective fertilizer for grass land, and that its effects are not exhausted in a single year. The results of the experiments, as shown in the following tables, speak for themselves.

Plots of one-tenth of an Acre.
Manured January 20th. Grass cut July 31st, 1875.

Number of plots.	*Fertilizer used.*	*Quantity per plot of one-tenth acre.*	*Weight of green grass per plot.*	*Increase over yield of plot manured.*	*Cost of dressing.*
1	Peruvian Guano.....	45 lbs.	2,084 lbs.	813 lbs.	$1.50
2	Soluble Guano.....	45	1,983	714	1.20
3	Soluble Guano..... / Superphosphate....	33½ / 22½	1,823	554	1.20
4	Superphosphate.....	45	1,634	365	0.60
5	Nothing.....	....	1,278	...	....
8	Superphosphate.... / German Potash Salts / Nitrate of Soda.....	22½ / 22½ / 22½	1,743	474	1.20
9	Soluble Guano..... / Nitrate of Soda..... / Superphosphate....	33½ / 11 / 11	1,728	459	1.46
15	Barn yard Manure....	1 load, 2240 lbs. ?	1,698	429	1.20

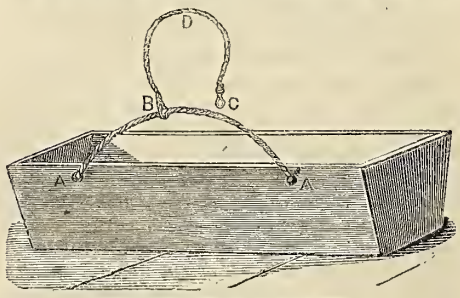
The weight of grass cut the second sear, (1876), was as follows.

No. of Plot.	*Weight of Grass per Plot.*	*Increase over yield of plot not manured.*
1	898 lbs.	260 lbs.
2	819	153
3	852	214
4	752	114
5	638	...
8	624	(14 decrease.)
9	668	48
15	847	209

The fixed expenses being the same for each plot, the extra yield in the two years shows the return for the cost of the fertilizer used. Thus $1.50 worth of guano, returned 1,073 lbs. grass, or the equivalent of 357 lbs., of hay, (estimating hay as one-third the weight of grass), equal to a cost of 42 cts. per 100 lbs. of hay. The results show further, what is learned from nearly every experiment with mixed fertilizers, viz., that they are not so effective if mixed as when each is applied alone; one seems in some manner to neutralize some of the useful effects of the others when they are mixed.

Feed-Trough and Halter.

"F. W. B.," St. Louis Co., Mo, sends the following description of a feed-trough and tie for cattle, which he uses with much satisfaction; and also a sketch to illustrate it, which is here engraved. "The trough rests on the floor, is 4 feet long. *A*, *A*, are inch auger holes; a rope, 4 feet long, is put through them and tied. Another rope, *D*, has a ring spliced on one end, and a 'snap-hook' on the other. The longer rope passes through the ring, *B*, and when the rope, *D*, is put over the neck of the cow, the 'snap,' *C*, hooks into the ring. This allows the animal to stand or lie down with comfort."



FEED-TROUGH AND HALTER.

Wool-Growing in Texas.

BY L. S. NICHOLS, SAN ANTONIO.

Notwithstanding the present depressed state of the wool market, there seems to be a great number of persons who contemplate coming to Texas for the purpose of engaging in the business here. Some of my correspondents are men having more or less experience in Northern States, and by reason of limited range desire to change their location to a climate less rigorous, and where a larger range can be easily obtained. Others are writing for information in regard to the business with a view of engaging in it here for the first time in their experience. Many of the inquiries come from young men with limited capital—some propose to start with one flock, some with three thousand stock sheep, and one man wants to purchase ten thousand to start with.

Now, to all I would say there is room here in Texas for all that will come, and a climate for that business that is equal, if not superior, to any in the civilized world. As to the measure of success that will attend the business here, it will depend almost entirely on the man who conducts it, for beyond any question, properly managed, it is one of the most remunerative pursuits that can occupy the attention of a man of good judgment, who will personally superintend his flocks; at the same time it is a business in which no one can succeed who will not either by himself, or by some faithful and experienced assistant, give it close attention.

All will readily understand that a ranch here to commence with on a stock of 5,000 head will be at a much less pro rata expense than one of 1,000 head. Certain expenses have to be incurred for one thousand head, which need not be materially increased for three thousand head. To commence right, a sheep ranch must necessarily be fitted up with one good corral—to be used for dividing, catching, and marking sheep, with dipping vat, shearing floors, and wool shed—and when properly arranged, so as to handle easily and satisfactorily one thousand head of sheep, can easily be used for three flocks of that size. The corral for these purposes is not used for corraling the flock at night, or at any other time, except when there are some to catch, or the flock is to be divided.

It is very difficult at present to get a good lot of graded ewes in this part of the State for a new ranch, that will be of uniform character and age, and those who will be satisfied with nothing less than fine ewes to start with, will be obliged to pay a strong price for them, or take a flock as they run of all ages, from one to eight years, or else import from some other State. Experienced men will, of course, act in the start upon their own judgment in the selection of their stock of breeding ewes, but I would most certainly advise the inexperienced against the purchase of high grade ewes, either here or to bring here from a northern State. Good select Mexican ewes, two years of age, to be crossed with strong well-wooled Merino or South-Down bucks, will not only be a safer class of stock for a commencement, but they will cost less than one-half the outlay to start with, and the beginner can have a uniformity in his flocks that he cannot get at any reasonable expense, if he buy high grade sheep as a basis. The generally received opinion that the Mexican ewes are all alike, is erroneous, as I can prove to any man who will go with me to see a few flocks in this section, and compare them with others that have been carefully selected one hundred miles south of the Rio Grande River, and brought here during the past winter. The experience of a number of men who have tried it,

proves that breeding ewes brought here from Northern States do not seem to do well, or give satisfactory returns either in increase or wool for the first season. A flock of well selected Mexican ewes, from one to three years old, will cost, delivered at San Antonio, one dollar and seventy-five cents per head. A mixed lot of all ages can be bought for $1.40 to $1.50. These selected ewes will give from 80 to 90 per cent increase, as they are good breeders and nurse well. They will give from two and three quarters to three pounds of wool after the first clip, or after being here one year. If they are brought late in the summer from the Rio Grande, they will not give over two pounds of wool the next spring, as they will lose most of the summer's growth by driving through the chaparal on their way up. If purchased after October 1st, they will be shorn of their summer fleece, as the custom in Mexico and southwestern Texas is to shear their sheep in March and October, but fall shearing is discarded now by most of the flock masters around San Antonio. A safe estimate of cost for one flock, or 1,500 head, taking as a basis Mexican ewes, will be about as follows:

1,500 selected Mexican ewes, @ $1.75	$2,625.00
30 head good rams, South-Down or Merino, @ $40	1,200.00
One good Mexican shepherd, $12.50 per month	150.00
Supplies for shepherd, $7.50 per month	90.00
Extra hand during lambing time	25.00
Shearing and sacking 1,500 fleeces, @ 6¼	93.75
Salt and Sundries	100.00
Total	$4,283.75

This will cover all outlay for the flock for one year, except the corrals, and there is such a wide range of expense in this item, that it can only be properly estimated on a knowledge of the proposed future operations. The expense of a corral would be about $600, all complete, and is ample for from three to five thousand sheep. As to the grazing lands—there are plenty of locations to be rented for a term of years at a cost that would not be more than the taxes on the land. The estimate for shearing and sacking is full. My Mexican shearers worked for three cents per head this spring, and I furnished them rations. After keeping the sheep here one year, if they have been well selected, they will give full three pounds per head, and the half-blood yearlings will shear full as much as the original flock, and the wool of course of a much better grade for market. Mexican wool, unwashed, in the San Antonio market, sold this year at from 13 to 15 cents per pound.

A beginner should have his arrangements so as to carry on his operation—the purchase of original flock and the payment of all expenses for the first year's business without using the income from his first crop of wool. This should be left to go toward payment of the second year's expenses, and he can then calculate on meeting all his necessary expenses connected with his flocks from the proceeds of wool. After the third year he will have an annually increasing surplus of income over expenses from wool alone, leaving the increase of the flock to be the main basis of profit.

Fifteen hundred head is considered about the average number for one shepherd to take care of here, with help for one month in lambing time. I would prefer to have lambs come from October to December, so as to have all docking and trimming done in January, and have the lambs out of the way at shearing time. The grass in the winter months is fresher than in the summer, but the principal reason is, that during the summer months it is almost impossible to either dock or castrate lambs in this climate, as the screw worm is one of the most troublesome and fatal of all pests, and this will apply to cattle and horse stock as well as sheep. Sheep here have an abundance of grass the year round. The enforcement of our State Law in regard to cutaneous diseases will effectually prevent the spread of scab, and with ordinary care it is easily eradicated from the flock by the use of tobacco and sulphur.

The annual expense of keeping sheep in this country need not exceed thirty-three cents per head—after corrals and pens are once established. Eighty per cent increase and five per cent per annum loss in all flocks from one year old up to six years old is a safe calculation to make; from six years old the estimate for loss should be doubled. As to the best cross to make upon the Mexican ewe, there is a variety of opinions. Most flock masters prefer the Merino. My own views are in favor of the South-Down as first, and Merino on the produce of this first cross. Any inquiry not already satisfactorily answered, I will take pleasure in answering by mail upon application by letter.

A Self-Feeding Corn Crib.

In parts of the West, where the chief use of corn is to feed it to stock in the open field, a crib may be used that will not only store the corn, but will supply it to the stock as they may need it, without any further handling, than merely filling the crib. Corn being very cheap, and labor dear, it is an object to save labor at the expense of the corn. But as hogs are always kept along with cattle under such circumstances, no corn is lost; what is dropped by the cattle, is picked up by the hogs. The crib may be made of logs or plank, but should be built strongly. It is of the ordinary form, but open at the bottom, where it is surrounded by a pen, reaching a foot above the open bottom. The pen is larger than the crib, so as to give room for the stock to reach the corn, and is of a convenient hight, or about 30 inches to 3 feet. The pen is planked over about a foot below the bottom of the crib, and if the space below is filled with earth, it will enable the building better to resist, when it is empty, the heavy winds of the prairie. The engraving on the next page shows the form of one of these feeding cribs, which may be made of any suitable size, or of any convenient material.

A Cool Cellar with a Well.

The space above an ordinary well is not only lost, but frequently gives opportunities for the admission of vermin or of surface water, with whatever impurities may be contained in it. There is no necessity that a well should be open to the air, on the contrary, the more closely the water is confined, the better it is. The best of all wells are the driven wells, which are simply enlargements of the underground water-channels, having no connection with the surface, except through the pump tube. In some places it is a common practice to use the upper part of an ordinary well as a milk cellar, having steps to go down into it, and shelves upon which to place the milk pans. This is a dangerous and uncleanly practice. A correspondent from Pennsylvania, who has come into possession of a farm having a well so arranged, asks how to improve it at the least cost. As we know of several such cases, we have prepared the engraving on page 380 to show a plan for their improvement. The well should be arched over solidly with brick or stone, and cemented upon the top. It may then be covered with earth, leaving a space at one side for the pump tube to go down. The excavation may then be enlarged, and the walls bricked or stoned up, making a cellar. The floor may be cemented or bricked. A low shed may be built over the cellar, as a roof, or a complete building having a floor may be erected, and serve for a store-room, or an outer kitchen in which the pump is situated. In this case a doorway into the cellar and steps leading down are made. The well will then be cut off from the surface, and the space above it properly utilized. Except in cases where, as sometimes happens, quick-sand works into the well and gradually fills it, requiring an occasional removal, the lower part may be covered as here recommended.

Value of Leaves as Litter.—The very complete and thorough investigations of German chemists at the Experiment Stations, into the composition of forest leaves, have given as one result the knowledge of the value of leaves as litter to be used finally as manure. The following table of the constituents of beech and pine leaves, is taken from some published reports of investigations made in Bavaria. For comparison we add to it the quantity of the several matters contained in a ton of wheat straw, from which it will be seen that while beech leaves are at least worth as much as straw, pine leaves are not much inferior in value to it.

Annual Produce of an Acre of Forest, in pounds, and its Composition compared with that of a ton of Wheat Straw.

	Dry matter	Ash.	Potash	Lime.	Magnesia.	Phosphoric Acid.	Sulphuric Acid.
Beech leaves	2,972	165.5	8.81	73.08	10.90	9.32	3.23
Pine leaves	2,842	41.5	4.32	16.84	4.28	3.28	1.51
Spruce leaves	2,683	121.3	4.30	54.37	6.20	5.72	1.87
Wheat straw	2,000	85.2	9.80	5.20	2.20	4.60	2.41

Farming Without Stable Manure or Stock

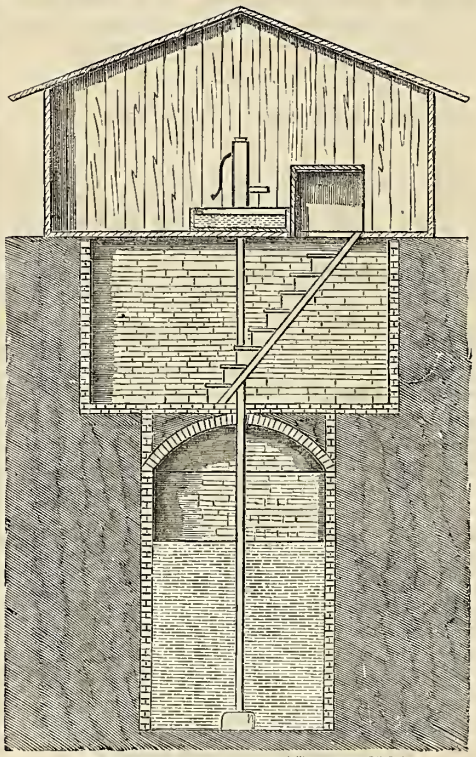
We have previously referred to the successful farming of Mr. Prout, an English farmer. His system is to grow continuous crops of grain, roots, and clover, entirely by the use of artificial fertilizers. He keeps no stock except the work horses, and the crops are sold upon the fields when ready for harvest, the purchasers harvesting and carrying them away. This exceptional manner of farming is made profitable by Mr. Prout, and some of the crops sold this season are the eleventh in succession upon the same fields. Although the season has been remarkably unfavorable, the yield and prices of the crops were satisfactory. Barley was sold at an average price of $40 per acre, the purchaser to cut and carry it away. The wheat crop brought from $42 to over $54 per acre. Oats realized $32 for a crop damaged by wet weather, up to $48 per acre for those in better condition. For 11 acres of mangels $117 per acre was bid, and $115 for 8 acres, but they were not sold. As these last prices were the values in the ground, unharvested, the root crops seem to be more profitable under this system, than even the grain crops.

The Good Points in Light Brahmas.—Of the four leading varieties of Asiatic fowls, the Light and Dark Brahmas, the Buff and Partridge Cochins, the Light Brahma is unquestionably the most popular. We see this not only in the poultry yards of the villagers and farmers, but at the Agricultural Fairs and Poultry Shows. The most numerous coops, and the largest birds, are always to be found among the Light Brahmas. The American passion for great things is gratified by the size of these birds. Cocks weighing 14 to 15 lbs. are not uncommon, and, in exceptional cases, they have reached 16 and 17 lbs. Cockerels weighing 12 and 13 lbs. are shown every season. Ten lb. pullets are brought out frequently, and 12 lb. hens flourish in every exhibition. We have found all these varieties fair layers of large eggs. The Light Brahmas are hearty feeders, and grow quite rapidly. The chickens make early broilers, and the pullets lay well through the first season. They make very handsome yellow-skinned poultry, and the flesh is of good quality and sells well in the markets.

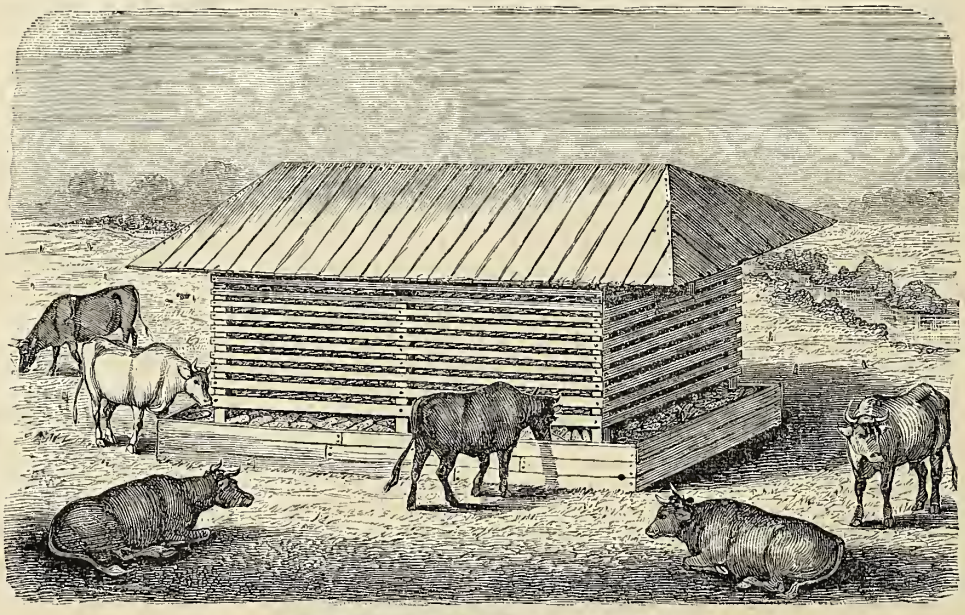
Fall Weeds.—Spring weeds stand a chance of being eradicated. There is the planting, and the cultivating, and hoeing, which leave the fields so clean at the commencement of the hay season, that hardly a weed is in sight. The peril begins just there. Weeds grow apace among the shading corn and potatoes, and long before harvest many plants mature and scatter their pestilent crop. There is nothing a farmer pays dearer for than the rest that allows them to thrive. These seeds will be right in the way of cultivation the next season, and for years to come. They injure the succeeding hoed crops, and the grain and grass crops. It is a nuisance to leave charlock amid oats or barley, and a fraud to sell grain with foul seed in it. It is a nuisance to have to pull dock out of your winrows of hay, and something worse to sell hay with dock in it. Few farmers are awake to the economy and honesty of absolutely clean fields. We want to keep up the good fight in the fall months.—It will pay.

Weeds—A New One—Condrille.

Good cultivation requires us to destroy the plants we do not want, as much as it does to encourage those that we desire; in other words, the killing of weeds is quite as important as any of the necessary operations of the farmer and gardener. In order to fight weeds successfully, one must not only know them at sight, but must also know something about their modes of life, how long they live, and how they multiply. We hold that we do our readers as good service in making them acquainted with a new weed that threatens to be troublesome, as when we introduce a new plant that promises to be useful and profitable. Many of our weeds—not all, but a large majority—are natives of other countries. It is true that they do not take long to become naturalized citizens, and as those persons, who were brought up under the strictest monarchies, often become, in a republican country, the most radical, so do these plants from other lands quite outdo the "native Americans" in their appreciation of our subtropical climate, and in their readiness to accept the "largest liberty," which the American farmer is so willing to grant them. The old and familiar weeds show no disposition to depart, but new and strange ones are ever ready to come; every bale of South American or Australian wool, every cargo of ballast that is unloaded, every parcel of trees that comes from an European nursery, and even every box that contains the personal effects of an immigrant, whether of the North European Dane or Swede, or the South Russian Mennonite—each of these may be looked upon as a Pandora's box with possibilities of untold evil. As a single spark is sufficient to begin a great conflagration, so one tiny seed, which may be hidden in either of the receptacles which we have suggested, or may even come concealed in the coat of some choice animal, may establish a crop that shall waste the energies of our farmers in the effort to subdue it, and cost our agriculture its annual thousands, if not millions. Could some one have cut up the first plant that appeared here of Canada Thistle, Toadflax, Viper's Bugloss, and others of the legion, before it flowered, who can compute the money the act would have saved the country! It probably can not happen that any new weed can be literally "nipped in the bud" on its very first appearance in the country. People in general do not notice plants enough, to know whether one is a stranger or a native, or care enough about the matter to destroy it, even if it has the aspect of a dangerous interloper. Generally a new weed must make the inconvenience of its presence felt near the point of its introduction, before any one will take the trouble to find out what it is, and by the time it has attracted the attention of any one, it has been so long established that its progeny has started out like a horde of tramps, to live upon the farmers. It becomes necessary that each farmer, as a matter of safety, should know enough of plants, to be able to detect a new comer. We do not mean that he should be a botanist—though it would add greatly to the pleasure of his labors to know every plant he met—but his eye should be so accustomed to the forms of vegetation around him, and his powers of observation should be so educated, that he can at once notice any stranger that appears in his own fields, or in the neighborhood, for in this case charity does not always "begin at home." When a new plant appears, it should be at once challenged as to its origin and purpose, which may be best done by finding out at once what it is, or a shorter method may be followed by cutting it before it can mature seeds. We can not too strongly impress upon all cultivators the importance of at once attending to the case of every stranger plant. A human tramp gets a bit of the "bread of idleness," or at most steals some little thing, and is off to visit the neighbors; these plant-tramps generally come to stay, and to prevent you from raising bread, and instead of going to the neighbors, they send a stock of their abundant progeny, and, being social creatures, also provide for abundant companionship where they are. The N. Y. police frequently arrest suspicious characters, against whom no definite crime can be proved at the time; they take them into a gallery, and give them a forced sitting for their portraits, and the "Rogue's Gallery," which numbers some thousands of pictures of "hard cases," is one of the curiosities of the city to those interested in its criminal aspects. In a similar manner do we serve weeds of recent introduction, and by means of an engraving make their identification easy. The latest suspicious plant that has come to our notice is *Chondrilla juncea*, a native of a large part of the European Continent. It does not seem to have an English name, being unknown in England; the generic name, *Chondrilla*, is an ancient one applied to some related plant, if not to this, and is not translatable, but the French have modified the Latin name, and call the plant "Condrille," which will answer well enough for us. As will be seen by the engraving on the next page, the plant belongs to the Composite Family, and to that subdivision of it, which contains Lettuce and the Dandelion; indeed, the flower-heads are much like those of Lettuce. The plant is a biennial, with its root-leaves coarsely toothed; the stem, from one to three feet high, is stiff, with rather large branches, hairy below, and smooth above, with a few narrow leaves. The yellow flowers are in small heads, about half an inch across, scattered on nearly leafless branches; the pappus or down to the akenes (seeds) is very soft and bright white, each akene having a beak, at the top of which the down spreads like a little parasol, just as seen in the Dandelion on a larger scale. The plant seems to have been first brought to Alexandria, Va., where it was first discovered about ten years ago, and attracted no attention, except that botanists recorded its introduction. Since then it has spread, and is now found in various parts of Maryland; in some localities it has become thoroughly established, and we are informed by a correspondent that farmers are becoming alarmed at its threatening appearance. Being a biennial, the Condrille is easily managed; cut the stems before they flower, and it having no permanence by the root, will, if prevented from ripening seeds, soon die out. But seeds will scatter far and wide, and the whole neighborhood must aid in the work. We can not find that this plant is troublesome to European farmers, but its behavior there is no indication of what it will do here under different conditions of soil, climate, etc., for it is often the case that such plants develop much more rapidly here than at home. Whether it is likely to prove aggressive and troublesome, or not, it should be destroyed wherever it may appear, if only for the sake of neat cultivation.



WELL WITH CELLAR.—(*See page* 379.)



SELF-FEEDING CORN-CRIB.—(*See page* 379.)

The New Hydrangea "Thomas Hogg."

Those who concern themselves with the origin of the plants cultivated in our gardens and greenhouses, know that several of them are natives of Japan, and that many of the choice recent introductions have come from that country. The names of Fortune, Vietch, Maximowicz, and others, are well known as those of European collectors, who in recent years have added greatly to our horticultural treasures. There is an American, who, during two visits to Japan, one of them extending over seven years, has quietly sent home from time to time many valuable plants, and though plant-collecting was with him a secondary object, has added quite as many new plants to cultivation, as those who are more widely known. We refer to our friend, Mr. Thomas Hogg, of New York, a gentleman who shuns notoriety as much as others seek it, and of whom it is but simple justice to say that horticulture is as much indebted to him, as to any one for the choice Japanese plants that have been introduced within the last 15 years. One of the most valuable of the plants Mr. Hogg has yet sent home, is a Hydrangea, which he discovered during his last visit. Almost every one is familiar with the old garden Hydrangea, *H. Hortensia*, so named in honor of Queen Hortense, and not *H. hortensis*, as it is often written. This plant, introduced from China over a century and a quarter ago, is barely hardy at New York, but is usually treated as a house plant, to be put out in summer; it has enormous nearly globular heads of flowers, which are usually pink, but when grown in certain peaty soils containing much iron, are blue. The plant sent by Mr. Hogg, is a variety of this, but has its flower clusters of a pure white, while the individual florets are very large and of great substance. A wood engraving can not well show this variety as very different from the common garden Hydrangea, as its peculiarity depends upon color, (or the want of it,) and a texture, which an engraving can not reproduce. The engraving is made from a cluster borne by a recently struck cutting, the plant being hardly larger than the cluster, and serves to show the free flowering character of the variety. This must be very rare even in Japan, as Mr. Hogg, who has explored the country more thoroughly than any other foreigner, never met with but a single plant in all his travels, and this he came across in an old Japanese garden. Mr. H. sent this new Hydrangea to the well-known florist, Mr. John Cadness, of Flushing, L. I., in whose skillful hands it has been successfully propagated. Mr. Cadness exhibited specimens at one of the spring meetings of the N. Y. Horticultural Society, where it received especial attention from the florists present, who regarded it as of great value. White flowers of sufficient firmness to work into floral decorations are in great demand, and this affords an abundance of these, which may be used in masses, or the separate florets may be stemmed and worked in singly. We are informed that Mr. Cadness proposes to place the plant in the trade the coming fall, and we have no doubt its merits will be widely tested. As to the name, by which this variety is to be known, we need not tell any one who knows Mr. Hogg that it was bestowed without any agency of his, and while he was still abroad, but we can not wish the new Hydrangea any better future, than that it may prove to be worthy of being called "Thomas Hogg."

CONDRILLE.—(*Chondrilla juncea.*)

NEW HYDRANGEA "THOMAS HOGG."

The Use of the Feet in Seed-Sowing.

BY PETER HENDERSON.

For some years past I have, in writing on gardening matters, insisted upon the great importance of "firming" the soil over the seeds after sowing, especially at seasons when the soil is dry, or likely to become so. I know of no operation of more importance in either the farm or the garden, and I trust that what I am about to say will be read and remembered by every one not yet aware of the vast importance of the practice. I say "vast importance," for the loss to the agricultural and horticultural community from the practice of loosely sowing seeds in hot and dry soils is of a magnitude, which few will believe until they have witnessed it; and it is a loss all the more to be regretted, when we know that by "firming" the soil around the seed there is in most cases a certain preventive. Some two years ago I related in these columns how our crop of nearly two acres of celery plants was partially lost by neglecting to tread in the seeds, the dry heated air of May shriveling them and destroying their

vitality. Profiting by that lesson, I this season sowed two acres of celery seed (in quantity about 20 lbs.), the rows being about nine inches apart—"the marker" deepening the lines some two or three inches. After the man who sowed the seed, there followed another, who, with the ball of the right foot, pressed down with his full weight every inch of the soil over the seed. The ground was then lightly touched with a rake to level it, a light roller was then passed over it, and the operation was completed. Our crop of plants, notwithstanding the intense heat and drouth of the past summer, was as fine as it well could be, every seed seeming to have germinated. Besides, this "firming" of the soil had also prevented the dry, hot air from penetrating to the roots, so that, though we nearly averaged 90° during the month of July, hardly a plant was burned off. Now, from the same bag of celery seed that produced these plants, we sold seed to some hundreds of our customers, and we have already had scores of letters asking why their celery seed did not come up; not a few of them insinuating that the seed they had obtained was not good. To all such we, by letter, stated emphatically the cause of failure, and I trust that all whose seeds of celery or anything else fail to germinate, will first fairly investigate whether or not the fault has not been with themselves, rather than with the seed. I think it was the second year after I had begun the business of market gardening, that I planted six acres of sweet corn on a light, warm soil in the first week in July. As it is often the case at that season of the year, the ground was dry when planted, and it was nearly the end of the month before all the corn was above ground. The ground was carefully cultivated, but the whole operation was nearly in vain; as, before the corn had produced the desired "roasting ears," the crop was caught with frost and destroyed. Now, two or three pressures of the foot on each hill would have started the seeds at once, making a difference of two or three weeks in the maturing of the crop, and would probably have put a thousand dollars into my pocket, but I did not know the cause of failure then, nor, I must acknowledge, for many years after. Some years ago, as an experiment, I sowed seeds of beets, turnips, corn, and spinach, in July, treading in every alternate row. The beets and corn matured their crops in every instance where the seed had been trodden in, and failed to do so where this had not been done. In the case of the spinach and turnip seeds, the rows trod in germinated freely and at once, while the rows of those that had been left loose nearly failed entirely. The experiment was made with a view to show that beets of all kinds sown as late as the first of July, when the seeds germinate at once, have yet time to produce a crop, and sweet corn has time enough to produce its ears sufficiently mature for use in the green state, and furthermore to prove what I had long believed, that thousands upon thousands of acres of turnips fail from the want of "firming" the soil when the seed is sown. Of course if large areas are sown in turnips, the treading in with the foot might not be practicable; the next best thing is the roller, but that must be heavy enough to effect the purpose. As I have before hinted in the case of celery plants, the looseness of the soil not only prevents rapid germination, but even if germination does take place, and a long period of hot and dry weather follow, the young plant itself may be burned out, if the soil is loose, so that the dry, heated air can penetrate to the weak and tender root. This burning out after the seed has germinated, is sweeping in its effects on all seeds that are sown after midsummer, such as spinach, beets, turnips, etc., if the weather is dry and the soil loose. I beg to caution my inexperienced readers, however, by no means to tread or roll in seed if the ground is *not dry*. The soil may often be in a suitable condition to sow, and yet be too damp to be trodden upon or rolled. In such cases these operations may not be necessary at all, for if rainy weather ensue, the seeds will germinate of course, but if there is any likelihood of continued drouth, the treading or rolling may be done a week or more after the seed has been sown, if there is reason to believe that it may suffer from the dry, hot air. Another very important advantage gained by treading in the seeds is, that when we have crops of beets, celery, turnips, spinach, or anything else that is sown in rows, the seeds to form the crop come up at once; while the seeds of the weeds, that are just as liable to perish by the heat as are those of the crop, are retarded. Such of the weed seeds as lie in the space between the rows when the soil is loose, will not germinate as quickly as those of the crop sown; and hence we can cultivate between the rows before the weeds germinate at all. Such was our experience the past season in the two acres of celery plants alluded to, as the rows of the celery were clearly defined before the weeds had germinated at all, so that the hoe was applied at once, rendering the cost of culture less than half what it would have been had the seeds of the celery and those of the weeds started simultaneously. One of my neighbors, a market gardener, with whom I was conversing on the importance of this subject, stated to me that he had failed thrice in succession with lettuce seed sown in July, either from its failing to come up at all, or being burned off after it germinated; but in every case he had sown in dry weather, and had failed to tread in the seed, simply rolling the ground. Although one of our most successful men, with long years of experience, he had never before adopted the plan of "firming" the soil upon seed in dry weather, but at once became convinced of its importance on my statement of the leading facts stated in this article.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE VIII.—BEANS AND OTHER FLOWERS OF THE PULSE FAMILY.

In the course of an eloquent defence of a Salem sea-captain, charged with ill-treating and half-starving his crew, the late Rufus Choate electrified the jury by his eulogy of "that excellent esculent and superlatively succulent vegetable, the bean." We are to discourse upon the same topic, but not from the same point of view, nor in the grandiloquent style of the famous Massachusetts advocate. Although it is to be a standard dish in our present repast, the bean is too good, for our purpose, to be served at the beginning. We propose to bring it in at the end, and to begin with a papilionaceous or Pulse blossom, which ranks with the False Indigo and Clover as to plan of fertilization, that is, with the flowers we were occupied with in our last article. Clover-blossoms are individually small; so we take one of *Wistaria*, which is constructed on the same principle, only the flowers are in an open raceme instead of being crowded into a head, and the corolla is not lengthened and consolidated below into a tube.

Fig. 1 represents a *Wistaria* flower. The large upper petal turned back away from the rest is named the standard; the two side-petals below are the wings; the boat-shaped piece between the wings is called the keel. This consists of a pair of petals, joined together along the lower side — where the keel would be if the whole thing were a boat, but free and a little open at the upper edge. This keel completely encloses the stamens and pistil. There are ten stamens; nine with filaments united up to the curvature into a sheath split along the upper edge, where lies the separate tenth stamen (figs. 2 and 3. The pistil is enclosed in the sheath; the tip of the style, and the surmounting stigma, may be seen, on close inspection of fig. 2 and fig. 3, among the anthers. Fig. 4 is an enlarged representation of the stigma, (the little knob at the tip surrounded by a little fringe of bristles), the style, and the upper half of the ovary or forming pod. The anthers surround the stigma and—unless the minute fringe has some effect—there is nothing to prevent the pollen from falling upon the stigma. Like Clover and *Baptisia* it surely may self-fertilize, and the wonder is that it does not universally or generally do so.

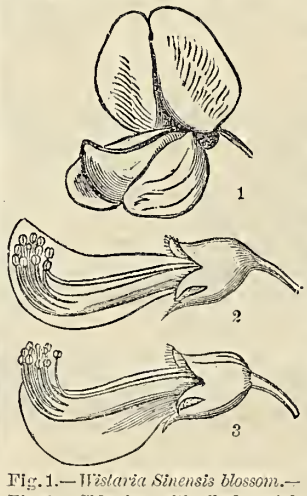


Fig. 1.—*Wistaria Sinensis blossom.*—Fig. 2.—*Side view with all the petals except one-half of keel removed.*—Fig. 3.—*Same with keel depressed by the weight of a bee.*

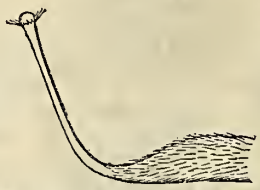


Fig. 4.—*Pistil of same, lacking the lower part of the ovary, enlarged.*

But bees and other flying insects visit all these flowers; and in *Wistaria* the mode of approach and operation is nearly the same as in *Baptisia* or False Indigo, already described. The bee, with head approaching the center of the flower, to insert its tongue down at the junction of the standard and keel, alights or partially rests on the latter. Untouched, it is in the position of fig. 2, the weight depresses it to that of fig. 3, and so lets the abdomen of the insect plump down upon the now protruding anthers and stigma. The first flower so visited simply deposits a quantity of pollen upon the under side of the insect's body. The next, brushing its stigma over some part of the pollen-covered surface, gets fertilization from the pollen of the preceding flower, and at the same moment gives a fresh supply of pollen, of which the next flower visited gets the benefit, and so on. In any instance, the stigma may get some own-flower pollen, and be self-fertilized; but it is equally or more likely to get the pollen of other blossoms, and so be cross-fertilized. We cannot be far wrong in assuming that all this is meant for cross-fertilization either generally or occasionally.

In all such flowers the insect does not usually alight or press upon the keel alone, but upon the wings and keel together, or upon the wings only when these are large in proportion and cover the keel. But the two are locked together toward the base, so that pressure upon the wings depresses the keel all the same, and produces the effect.

From such papilionaceous flowers in which cross-fertilization must be frequent, let us pass to those of the same family in which it is made sure. There are all gradations, and many ways of doing the thing, showing an exhaustless fertility of contrivance. Probably not half the ways are known yet in this well-known and familiar family of flowers, I will here illustrate only two of them, and leave a third for a future article. In both the cases now in hand, the pollen is transferred to the style underneath the stigma as soon as the blossom opens, or even earlier—so far in the fashion of the Bell-flowers, described in our first article. Peas and Beans are our examples.

Instead of Pea, we take a Locust-blossom, because it is simpler to represent. There is a complication and twisting of the style in the common Pea which is not quite so easy to show clearly in a wood-cut, but the contrivance is the same. Locust-blossoms are so like those of *Wistaria*, (shown in our figure 1,) that there is no need to give a separate drawing of a whole one. Figure 5 shows one with the standard and wings taken away, the keel only remaining. Figure 6, the same when the keel is pressed down by the alighting of a bee on the wings, which are large and broad. Only the end of the style, with the stigma at its tip, projects; the anthers remain within. This projecting tip strikes

Figs. 5 and 6.—*Flowers of Locust, with all the petals except the keel removed.*

against the abdomen of the bee, which, in the oblique movement, is hit first by the stigma, and then

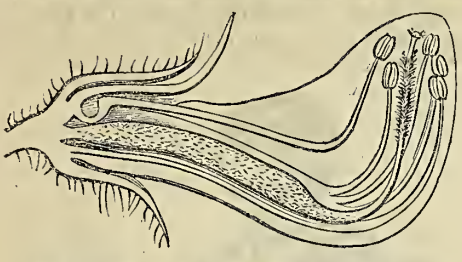


Fig. 7.—*Same as fig. 5, cut through and enlarged.*

by the part of the style just beneath. Now this is furnished with bristly hairs, thickly set, in the manner of a bottle-brush. To see this clear by itself we must look into a flower-bud. Figure 7 shows one like figure 5 cut through. Five of the still unopened anthers are seen; and the style with its brush in the center. Figure 8 shows the same style from an open flower. The difference is that the brush is loaded with pollen. The anthers have discharged their contents in such a way that almost the whole is borne by the beard of the style. So, when a bee visits a flower and depresses the keel by his weight, he brings some particular part of his hairy abdomen first against the stigma, then against the pollen-loaded brush. Some of the pollen so transferred from the hairs of the style to the hairy surface of the bee's body, is certainly transferred to the stigma of the next flower visited, a fresh charge of pollen taken to be bestowed upon the next flower, and so on. It is as neat and as sure as a printing-press, in which the types are first inked by the roller, and the ink thence transferred to the paper.

Fig. 8.—*Style from the same taken later, its brush loaded with pollen.*

The contrivance in Beans (*Phaseolus*) is similar, with a difference. In the country, in the writer's boyhood days, not "to know beans," was the current expression for uttermost ignorance. Here is something about beans which, it is safe to say, few of those brought up among them even yet know. The blossom is on the same plan as that of Pea, Locust, and the like, (see fig. 9); but the standard is smaller; the wings more horizontal and projecting; the keel long, narrow, turned up toward the center of the flower, and (if a bucolic comparison may be permitted), curled up after the similitude of a pig's tail. Figure 10 shows this, apart from the rest of the flower, and enlarged. How the pistil is coiled up within this is shown in the section of the same, more enlarged, (fig. 13); the stamens are left out, for clearness. Note the style, with the stigma set obliquely at its tip, and below it for some distance the brush of hairs, mainly on the same side as the stigma. This figure, taken in the unopened flower, shows the brush free from pollen. But the anthers shed their pollen just when the flower is about to open; and somehow this pollen mostly, then, gets packed upon the brush, so as to be as in figure 14. Now for the operation. Stamens and pistil lie concealed in the coil; the stigma just within the open end; the anthers a little farther back, but in the open flower already empty and withering. Press down the wing-petals gently, as is done in figure 11; these, being locked at the base with the keel, act so as to depress the coil of the style within, and out pops the stigma and its pollen-laden brush; withdraw the pressure and back it goes to its hiding place. The separate keel, greatly enlarged with the protruding stigma and brush, is shown in figure 12. When the pressure is made by a bee, searching for honey within the base of the flower between the keel and the standard, the same movement takes place; the stigma first, and then the brush, strikes against a certain portion of the front or side of the bee's body, and so brings about the fertilization of each blossom by some other than its own pollen. The machinery tells its own story plainly. The confirmation is familiar to all who "know beans" and their facility of mixing when different varieties are grown together.

Fig. 9.—*Bean-blossom.*

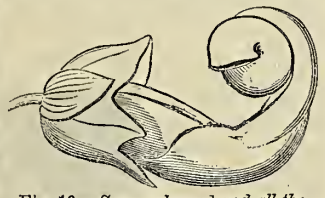


Fig. 10.—*Same enlarged and all the petals except the keel removed.*

Fig. 11.—*Same as 9, with the wing-petals weighed down, and stigma and brush protruding.*

Fig. 12.—*Keel from the same enlarged.*

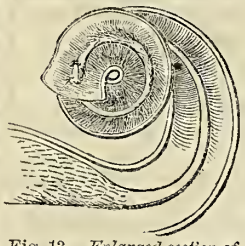


Fig. 13.—*Enlarged section of the keel, showing the pistil within, before the anthers open.*

Fig. 14.—*Same pistil after the discharge of the pollen upon the brush of the style.*

Lilies from Seed.

In discussing the subject of Lilies with Anthony Waterer, Esq., the well known English nurseryman, we learned from him that the same trouble had been found with the Gold-banded Lily, *Lilium auratum*, in England, that has been experienced here. We have more than once referred to the fact that though thousands upon thousands of *Lilium auratum* bulbs had been imported and sold here, we rarely saw an established bed out of all that have been planted. The experience has been the same in England as here; the bulbs throw up a small flower stem, produce one to four or five flowers, the stem dies down, and the next year fails to appear altogether, or a few weak shoots come up; upon digging the bed we find that all the large bulbs have disappeared, leaving in their place others not larger than hickory nuts. Mr. Waterer informs us that he had no success with *L. auratum* until he grew his own bulbs from seed, and that he now has several acres in this lily, raised from both seeds and scales, the bulbs of which can be as much depended upon as those of any other lily. In his favorable climate and soil, he gets good flowering bulbs in three years from the seed. We have never seen this grand lily in perfection, and probably our climate will not allow us to do so; Mr. W. states that he measured one stem *eleven feet* high, and it had 135 flowers upon it. This far surpasses anything we can hope to equal, and we shall be quite content if we can get our poor half-dozen blooms, and can depend upon holding on to the bulb year after year. Knowing the impatience of our flower growers, we are sure that few will be content to wait during three years from seed to flower, and we can not in this country hope to get flowering plants as soon as that. Still, to those inclined to try raising this and other lilies from seed, we would remind them that the sowing should be made as soon as the seed is ripe; if kept until spring it rarely germinates, and the plants, whether young or old, should have abundant shade.

KŒLREUTERIA PANICULATA.—It seems to be a great pity that a tree with so many elements of popularity as this, should be so little known. We have several times called attention to it, and shall probably do so several times more, for we can do lovers of neat, pleasing trees no better service. The dark green, handsomely cut foliage is remarkably clean; we do not recollect to have ever seen an insect upon it. The flowers are abundant, light yellow, in pyramidal clusters; and the large, bladdery pods are quite showy. The tree grows readily and rapidly from seeds, which the dealers in tree seeds supply in small quantities, if desired.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

What does a Mother's Work Include?

I often plead for a fair chance for mothers to do their work, and I know well that some who hear me or who read my words, have little sympathy with my earnestness. If a woman manages somehow to keep her children tolerably well fed, clothed, and schooled, and as healthy as most children, what would she have more?

She would have their companionship, their intimate acquaintance and friendship. She would gladly do for her children what only a good mother can do, with the best success. The dress-maker and tailor can clothe them for money, hired cooks can feed them, professional teachers can attend to their arithmetic and spelling, and yet there may be left a plenty of mother work and care. I remember well a young mother whom I met before I had a family of my own. She had but one child, a boy of three. It struck me then that I had never seen a real mother before, the relation between these two was so much more perfect, and so much more natural, than any I had seen before between parent and child. She was not all absorbed in her child; she did not think him perfect, and did not worship him. She worked for the Sanitary Commission, and had a hearty interest in the general affairs of the day. But every step of her child's progress was interesting and important. The tendency of his pastimes, and the influence of his play-mates were thoughtfully considered. The instinctive workings of his mind were studied, in the hope of being able to meet his growing intellectual and moral needs. His daily habits were guarded, so that he might early get a healthy bent, and lay a good foundation for a healthy and vigorous manhood. His mother played with him, and read to him, and gave good heed to all his questions, though she might not answer them until a proper time came, or perhaps not at all. Most people who knew her, may have noticed only that she enjoyed her child's society, without thinking what she was doing for him. A few knew that it was a reciprocal education of incalculable benefit to both mother and child. Her mind was at liberty to make her child's culture her chief business. When I knew her she had very few household cares, and she allowed society to make no heavy demands upon her time and thoughts. She said that nothing amazed her more than to see that mothers generally were not *acquainted* with their children, and did not seem to realize the fact.

To show what some mothers are thinking about, I will quote from a recent letter from the playmate who was my chief partner in the mud-pie business, over thirty years ago. She says: "But when a mother has to hurry up from her sick-bed, and begin to turn baby off, and wish and watch for his nap, so that she can fly around and do as much work as can be crowded in, and say 'O dear!' when the nap is over, and turn off the other children because she 'can't spend time,' it's *all wrong*. O. gives me a lesson once in a while. She believes in children having a good time, whether 'the work' is done or not. She was here, and G. was teasing me to go down to the river and throw stones, and I said 'I can't spend time. I'm in a hurry.'—O. said, 'Aren't you ashamed! Only one child and can't take time to please him by going to the river to play a little while!'—Then she made me promise to go up to her house with G., and not to take a stitch of work, but just roam around or go fishing, or do anything we wanted to."

I have lately had some refreshing talks with a

New England mother, who had been absent from her family for several weeks. I saw how she was treasuring up every idea that came to her for the improvement of her children. She sought to inform herself on all points that would make her a more useful companion to them, and enjoyed planning her work for them when reunited to them once more. It seemed to her that she should manage somehow to give them more of her personal training and society, than she had given them before her sickness and her journey, and she was in search of books suitable for reading with them, and gave considerable study to her choice of presents which would have the best effect upon each one.

Of course it is possible to fuss over children too much, and there is such a thing advisable as "judicious letting alone"; but it ought to be possible for enlightened mothers to follow their best judgment in each case. Schools and classes, especially kindergartens, are great helps, no doubt—indeed they are necessary to the broadest development of character—but they can never take the place of good home education. If a mother has not time to read with her children, to play games with them, to supervise their employments, to sympathize with them in their enthusiasms and disappointments, it is a great pity, and a remedy should be sought.

Jelly and Marmalade Making.

I remember how difficult a matter it used to be, among most of the housekeepers familiar to my childhood, to make jelly "come." You would see jars and tumblers of thick red fluid sitting in the sunshine, waiting for the sun's rays to evaporate the excess of water, and change the fluid into jelly. You would hear housekeepers apologizing for their gummy jelly, by explaining how they had to put it over the fire a second time and boil it down, thus thickening the fluid, but not making successful jelly. Other housekeepers said they never had a bit of trouble in making good jelly, being very particular to take the fruit when first fairly ripened, and when freshly picked and dry. They were also careful to observe exact weights and measures. Jelly can be made from any fruit or vegetable, from which can be obtained the peculiar substance or principle called *pectine*—so called from a Greek word meaning *curdled*. This can be obtained not only from currants, grapes, apples, plums, quinces, and other fruits, but from turnips, carrots, beets, and other roots, flavored in each case by some other principle peculiar to each fruit or vegetable. Jelly is commonly made by mixing sugar with the fruit juice, but usually the quantity of water in the juice must be reduced by boiling or by the action of sunshine. If boiled too long, it loses its power to form jelly, and becomes gummy. Boiling the sugar with the fruit juice longer than is necessary for its perfect mixture, spoils the flavor, or makes the jelly more bitter and less clear in appearance, than when the sugar is put in after the juice has been boiled sufficiently alone. To prevent the necessity of boiling the juice and sugar together, the most careful housekeepers now put the quantity of sugar necessary to make the jelly they are preparing on plates in the oven, letting it get as hot as possible without burning it while boiling down the juice. The plan is strongly recommended by Marion Harland, who says she has practiced this for twelve years without a single failure. If too little sugar is used, the jelly will not stiffen without over-boiling, which spoils both texture and flavor. Recipes for jellies often direct us to "simmer in a little water," until soft enough to strain through the jelly bag. This is not necessary, and by the addition of water longer boiling is required. It is only necessary, in order to get the juice of the fruit set free, to steam it well. This may be done by setting the clean, dry fruit over a kettle of boiling water in a covered pan. If a tin pan is used, it must be bright and unworn. A rusted or blackened tin, or an iron spoon, would injure the flavor of fruit. Or a stone jar, containing the fruit, may be set in a kettle of cool water, and boiled until the fruit-cells are broken and the juice set free. Put a block or a small dish under the jar, so that it will not break when the water around it begins to boil, and do not fill the kettle so full of water as to make it boil over into the fruit. The jar should be kept covered. A *new* tin steam cooker answers well for making jelly, though a stone jar is perhaps the nicest. Brown sugar is as good as white for making jelly, except that it gives a darker color. The usual proportions given are "a pound of sugar to a pint of juice," but a little less makes better crab apple jelly, in my opinion.

All this talk about jellies comes too late for currant and berry jelly this season. One "kink" about making strawberry jelly I may mention here, however. You can make your jelly from the same fruit that you use for canning, if you follow Marion Harland's directions for "canning berries." Under that head she says, "Heat slowly to boiling in a large fruit kettle. When they begin to boil, add sugar in the proportion of one tablespoonful to each quart of fruit. Before doing this, however, if there is much juice in the kettle, dip out the surplus with a dipper or cup. Leave the berries almost dry before putting in the sugar."

So this juice taken from the berries which go to fill your jars as "canned fruit," makes your berry jelly, after having been strained. Add a little lemon juice to the strawberry juice, and to your raspberry juice add, if possible, currant juice in the proportion of one part currants to two parts of raspberries. Then observe the general rule of pound for pint, boil twenty minutes before adding hot sugar, and only two or three minutes afterward.

Beautiful jelly can be made from the wild plums, so plentiful in some parts of the West, and nice marmalade can be made from the same fruit.

Wild Plum Jelly.—Pour boiling water over your plums, turning it off immediately—this is for the purpose of extracting the bitter taste in the skins. Steam the plums in a stone jar or covered pan over boiling water, until they crack so that the juice runs out. Put them into a colander and let them drain, but do not press them. Boil this juice twenty minutes, meanwhile heating the sugar on plates in the oven (pound for pint) so hot that you cannot bear your hand in it. Put the hot sugar into the boiling juice, and boil all together a few minutes.

Plum Marmalade.—Rub the plums, after draining, through a sieve or colander, to take out the stones and skins. Add half a pound of sugar for each pint of pulp, boil slowly, stirring well to prevent burning, until it is a smooth, thick paste.

Excellent marmalade is made by mixing the sifted pulp of wild plums and crab apples.

Crab Apple Marmalade is made like plum marmalade, after sifting the steamed apples through a colander. Do not pare the apples, but only cut out the blossom ends. Half a pound of sugar to a pint of pulp. Boil until you have a clear thick paste.

Crab Apple Jelly.—Cut out the blossom ends and quarter the apples, but do not peel or core them. Put into a stone jar, covered well, and set in a kettle of tepid water, with a block or small tin in the bottom. Let it boil thus nearly all day, leaving it in the covered jar until the next morning. Then sift through a colander, and afterwards strain through a jelly bag. Allow a pound of sugar for a pint of juice. Boil the juice twenty minutes, add the *hot* sugar, stirring well, and let all boil up together two or three minutes. Some crab apples seem very dry and require the addition of a little water to the juice.

Wild Grape Jelly.—Gather the ripe fruit before frost, or while it retains all its acidity. Steam (without water) in a covered jar set in boiling water, until the grapes are well broken up. Strain through a colander, then through a jelly bag. Boil the juice alone twenty minutes, and add a pound of sugar for each pint of juice. Have the sugar *hot* when put in, stirring carefully. Boil all together two or three minutes.

The Kindergarten Gifts and Occupations.

The Kindergarten system for the education of children, has been more than once referred to in these columns. The name, meaning "Child-gardens," was given by the originator, Frœbel, because children were *cultivated* rather than taught. We cannot go into a detailed account of its principles and methods, but state briefly that the Kindergarten is founded upon the fact that children must *do something*, and it endeavors to turn their ceaseless activity to a good account; it furnishes the child with play, and so directs that play that it shall form

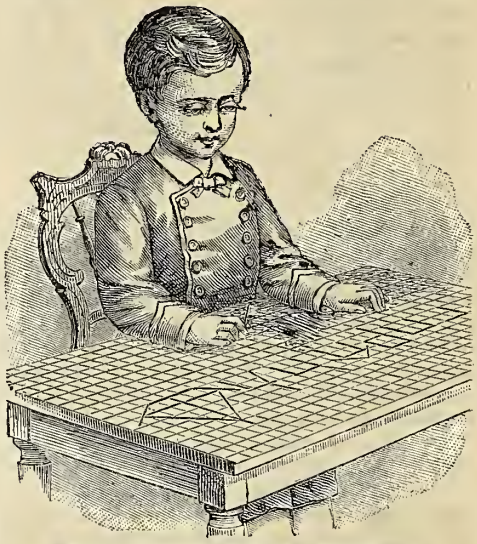


Fig. 1.—OCCUPATION OF STICK-LAYING.

a part of the child's education It is intended for very young children—even beginning before the child can leave the constant care of the mother, and goes on until the child is old enough to be taught from books and in a regular school. When the system was first introduced it made but slow progress in this country, but a few appreciative minds—among them notably Miss Elizabeth P. Peabody—saw its capabilities and persisted in advocating it; now, after a healthy growth, the Kindergarten may be regarded as thoroughly established. In proof of this may be cited the advertisements of the numerous Kindergartens in the columns of the daily papers, and the fact that in some cities it has been engrafted upon the common school system. While we had a general notion that this system of education was now accepted and advocated by the best teachers of youth, we had no idea of its extent until we recently made a visit to the book-store of Mr. E. Steiger, Nos. 22 and 24 Frankfort st., N. Y. This gentleman has for a long time made a specialty of Kindergarten literature and materials, and publishes catalogues of both. The works in English, German, and French, are surprisingly numerous, and there are several journals devoted to Kindergartens both in this country and Europe. Those who are interested in knowing its aims and means—and every mother should be—can send to Mr. Steiger for the Kindergarten tracts which he publishes for gratuitous distribution. As the child at play must have something to *play with*, Frœbel devised a series of playthings which he called "gifts" and "occupation material," to keep little fingers busy. These are regularly graded, and are to be used successively according to the development of the child. The first gift, to be used while the child is still in its mother's arms, consists of soft balls of different colors, each with a string by which it may be swung, and a box in which all may be kept. With these the child learns up and down, in and out, here and there; the use of the gift being accompanied by a little song, or verses, which can not fail to amuse the little one, and at the same time teach it many object lessons. From this simple gift, the series runs through various ingenious and pleasing forms up to the 20th, in which the child is given a modeling knife and a ball of clay or putty, and allowed to work various forms out of a shapeless mass. The manufacture of the gifts,

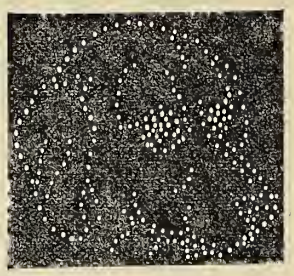


Fig. 2.—PERFORATING.

which, though all very simple, must be exceedingly neat and accurate, forms a large business of itself; the articles are put up in boxes for use in the family, and are accompanied by directions for the parent; they are also supplied to kindergarteners—as the teachers are called. Where there is no established Kindergarten, the same method is of the greatest help to the mother, and special sets are made for family use. To give some idea of these various occupations, we present some engravings which illustrate them. Figure 1 shows Frœbel's eighth gift: sticks for Stick-laying. A box, with compartments, contains 500 round sticks, like those used for parlor matches, and 1, 2, 3, 4, and 5 inches long. The child amuses itself by laying these upon a table to form various figures, either following its own fancy, or the numerous plates of designs that accompany them. An advanced child can readily make the letters of the alphabet with these sticks. Another occupation is Perforating or Pricking; the gift consists of a number of sheets of paper ruled in squares, a cushion of felt, perforating needles with handles, and numerous designs. This serves to educate the hand and the eye, and the child progresses from pricking simple lines and squares to more irregular and difficult designs, such as that shown in figure 2. When some skill is acquired,

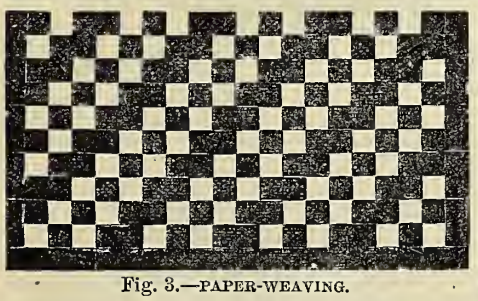


Fig. 3.—PAPER-WEAVING.

thicker paper may be used and the perforated pictures mounted for preservation or to use as screens, or parts of fancy boxes. The occupation of "Paper Weaving" is provided with strips and "mats" of glazed paper of different bright colors. The mat is a sheet of paper cut regularly, but not quite to the edges, making a warp into which the strips are worked by means of a weaving needle which catches the end of the strip and allows it to be pulled through, under and over the strips of the mat. Figure 3 shows a specimen of the weaving, which is capable of great variety, and allows of original designs. One of the most curious of the gifts consists of pieces of wire of various lengths, pointed at the ends, and a lot of peas. The peas are softened by soaking several hours in water, and by means of these and the wires a great variety of skeleton forms, like that in figure 4, may be built up. Little cubes of cork are sometimes used instead of peas, as shown in the engraving, and the sticks, used for stick-laying, may have their ends pointed and replace the wires. These are but four out of the 20 different occupations and gifts, but are sufficient to show how admirably play may be made to develope the child's faculties, and form a most valuable foundation for its future education.

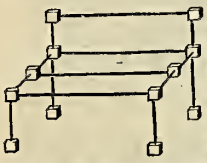


Fig. 4. PEAS & WIRES.

Mangles old and new.

A mangle as a household convenience is so little used in this country that the majority of persons have only an indefinite notion that it is something for smoothing linen, but what it looks like or how it works they have no idea. In hotels, hospitals, laundries that do steamboat washing, and such places, the smoothing of sheets, table cloths, towels, and the like, by the use of the ordinary flat or sad-iron would be very slow work, and in such places the smoothing is expeditiously and sufficiently well done by the use of a mangle. In its original form the mangle was a most cumbrous and unsightly affair, and was probably derived, with its name, from Holland, *mangelen*, being the Dutch name signifying to smooth with pressure, as well as to cut up promiscuously and mutilate. The machine consists of a smooth wooden table, upon which are two smooth rollers; upon these rests a large wooden box, which is so arranged with gearing, that by turning a crank the box is pushed back and forth. The linen being placed upon the table, the rollers, as the box is moved back and forth, pass over it and smooth it; in order to give the necessary pressure the box is filled with stones, and the weight brings the rollers down upon the cloth with great force. The machine takes up nearly as much room as a farm wagon, and to operate it requires a strong arm. When we have seen one of these unwieldy mangles in operation, and seen how useful it was in spite of its ungainly looks, we have wondered why some one did not invent a machine which would do the work with less labor, and not take up more than a third of the room, and have long been convinced that whoever would provide a compact and efficient mangle for use in the family, would not only confer a blessing upon housekeepers, but reap a satisfactory reward. This much-wished for end the "Standard Laundry Machinery Company" of Boston and New York claim to have accomplished. This Company makes washers, wringers, mangles, and whatever may be needed to fit up a complete laundry, and present a fine array of testimony from those who have used them, as to the efficiency of their machines. The mangles are made of different sizes and styles, to be operated by power or by hand; an engraving of one of

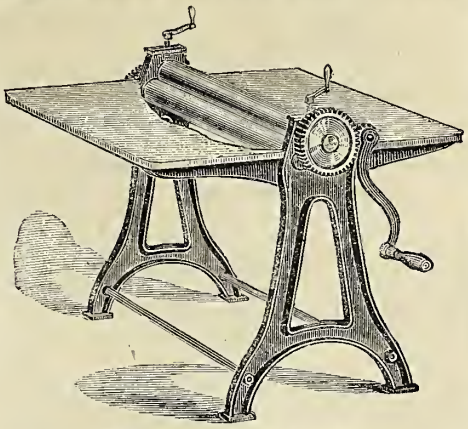


Fig. 1.—A FAMILY MANGLE.

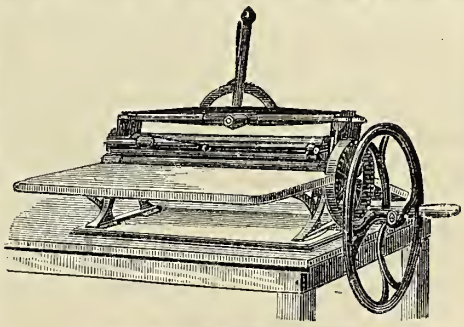


Fig. 2.—IMPROVED MANGLE.

the hand machines is given in figure 1; the damp linen being properly folded passes, when the crank is turned, between heavy rolls of polished metal, which are so arranged that the pressure may be regulated according to the material. In figure 2 is shown an improved form of the mangle, which may be fastened to a table. The smoothing being done entirely by pressure, it is claimed that linen and cotton goods last much longer when mangled, than when frequently smoothed by hot irons—an item of no little importance.

Potatoes in Kentucky Style.

Our potatoes turned out a small crop of small potatoes; more than that, they were treacherous, and though they came to the table looking fair without, they were often dark within, and not to be eaten. One day a new dish appeared in place of the usual plain boiled or mashed potatoes. Everybody pronounced it good by being helped at least twice. Upon inquiry of the presiding genius of the kitchen, we found that she learned the way of some Kentucky people, and the way is this: The potatoes are sliced thin, as for frying, and allowed to remain in cold water for half an hour. The slices are then put in a pudding dish, with salt, pepper, and some milk—about half-a-pint to an ordinary pudding dish. They are then put into the oven and baked for an hour. When taken out, a lump of butter, half the size of a hen's egg, is cut into small bits and scattered over the top. Those who have never eaten potatoes cooked thus, do not know all the capabilities of that excellent esculent tuber. The slicing allows the interior of each potato to be examined, hence its value where potatoes are doubtful, though poor ones are not of necessity required. The soaking in cold water hardens the slices, so that they will hold their shape. The milk serves to cook them through, and to make a nice brown on the top; the quantity can only be learned by experience; if just a little is left as a rich gravy, moistening all the slices, then it is right. In this year of small and poor potatoes, this method of serving them will be very welcome to many a housekeeper. The only trouble about it is, that every one will eat twice as many as when the potatoes are cooked in the ordinary way.

BOYS & GIRLS' COLUMNS.

The Doctor's Correspondence.

Well, here is quite a menagerie! The animals, it is true, are small, but if we judge them by the damage they do, they are quite as important as larger ones, and their ways of living and getting along in the world, are more wonderful than those of the others. You have guessed that I refer to insects. My advice to study the ways of insects has been followed by some youngsters, and even some of the parents of the young people have sent their inquiries to "The Doctor." All right, the more the better, only if the older people send their questions to me, they must expect to find them answered just as if they came from the boys and girls.....Here is master "H. W.," who writes from Mt. Sterling, Ill., that "some things" are injuring the leaves of his "Centennial Elm," and he wishes to know what they are. He sent them in his letter, and all that I find are some very unpleasant looking, shapeless spots, and I can not make out any form whatever. I am very sorry, as "W. H." calls them "curious things," and I should like to know what they are myself. If the "things" had been sent in a little box of tin or wood, they would have come all right. I must tell you

HOW TO SEND INSECTS,

and other small things that would be crushed in a letter. A little box is the handiest; it should be quite strong, which paste-board boxes seldom are, and only tin or wood are sure. But boys who live on a farm, do not always have such boxes handy, while they are too far from shops to get them, and they will be glad to know of a way, by which they can do quite as well without. Take a piece of pine or other light wood, and with an augur or bit bore a hole not quite through it; then you can cut away the wood around the hole, so that it will not be too heavy, and not so much that it will be too weak. Put your insect, or other little thing into this, put in a cork, and you will have a box, which, if not so neat as some, will answer perfectly.....There came the other day a lot of twigs of the Larch tree, to which were hanging a number of curious objects, like that shown on the next page in figure 1. I do not wonder that the one who found them was puzzled, but had he cut open a bag, he would have found inside of it a very active, blackish looking caterpillar. The insect is known as

THE BAG OR BASKET-WORM,

and also Drop-worm, though it is not a *worm*, except to those who give that name to all caterpillars. When the little caterpillars hatch out from the egg, they begin to spin a bag; when very young, they are found upon leaves, walking upon their forward feet, with their tails stuck up in the air, around them is the bag, to which they fasten little bits of leaf. As they grow, they add to the bag, and after a while this gets so heavy that instead of holding it up into the air, they let it hang down. The bag is brownish, and they fasten to it little bits of twigs, probably all the better to deceive the birds, and by the time the caterpillar is full grown, its bag is of the size and shape shown in the engraving. In Mexico there is a horribly thorny shrub, upon which a related Bag-worm lives, and it covers its bag with thorns, put on with the points outwards, in such a manner that no bird would think of touching it. These caterpillars move along on the twigs of a tree, hitch their case fast until

they have eaten all the leaves within reach, (some at least feeding only at night,) and then cut away their fastening, and move away to another spot. They are not very particular as to food, but will live upon almost any tree. When full-grown, the caterpillar fastens its bag very securely to a twig, and then goes into the pupa state, and finally the male comes out as a little moth, with a black body and glassy wings. The female never comes out, but makes the bag her coffin; she lays a great lot of eggs, and dies there; the bag containing the eggs hangs upon the tree all winter, and in spring the young hatch out to eat more leaves, and weave more sacks. They are sometimes very numerous upon shade trees, and injure them very much. The only way to get rid of them is to pick them off. Those found upon the trees now are either the empty cases of the males, or those of the females, almost filled with eggs, and if the sacks of eggs are taken off before spring, it will save much trouble. It is said that there is a Bag-worm in the West Indies, which makes a sack six inches long!....A few years ago, as I was drawing a bucket of water from the well, an enormous Bee went by my head with a *whoom!* into the curb, and disappeared; how so big a bee could get out of sight so quickly, puzzled me, and I watched. At length another came, and I being on the look-out, saw that it suddenly popped into a hole in one of the boards of the well-curb. Here, thought I, is something that will please the boys and girls, but the old curb was taken down and destroyed, while I was away from home, and I missed the chance of examining the nests. This year the same kind of bees are at work in a small porch that is over a cellar door, and they have bored holes as neatly as a carpenter could. Indeed, these insects are called

Fig. 1.—BAG-WORM.

CARPENTER BEES,

and this particular one the Virginian Carpenter Bee; it is of the size shown in figure 2, and is much larger than the common Bumble Bee, but being much less hairy, its body does not look much larger. The bee usually bores, by means of very strong jaws well formed for cutting, into the edge of a board, and when she (for the females do this) has a hole across the grain, about her own length, she turns and cuts the rest of the hole with the grain of the wood. You may be sure that she does not turn carpenter for amusement; she is really building a nest to provide for her young. The hole is about half an inch wide, and from four to five inches deep. As I could not well tear down the porch to get at the board in which the bees were at work, I have borrowed the engraving, figure 3, from Mr. Packard. This shows one of the holes cut through, so that you can see the inside. The bee puts an egg into the bottom of the hole, and then provides food for the young grub that will hatch from it, for you must know that bees, like butterflies and beetles, when just hatched, are larva or grubs, and only turn into perfect insects after they have made their growth. The food of the young or grub bee, is pollen, the dust of flowers, such as you see in such abundance in lilies; this the mother bee collects, and makes into a ball, giving each egg a lump as large as a common bean. The egg and the food being ready, the bee then takes the chips she has made, sticks them together with saliva, and builds a partition quite across the hole; she then puts in another ball of pollen, lays another egg, and shuts this in with a sawdust wall in the same way. When she is through, the hole or tunnel is divided across, as shown in figure 3, into cells, not quite half-an-inch long, each the home of a little grub. The lower two cells in the engraving show the grub hatched out, and feeding on its pollen ball. After the grubs get full grown, they then go into the pupa state, and finally come out as full sized bees. Other carpenter bees bore into shrubs, such as the blackberry and elder, and if you keep a sharp look out, you may find more than one kind....The other day there came from New Hampshire a little box, in which was packed in cotton something that might well be taken for

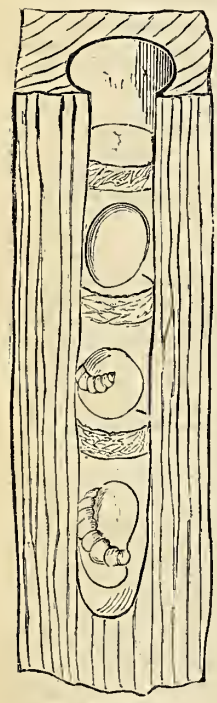


Fig. 3.—NEST.

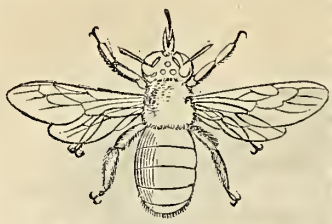
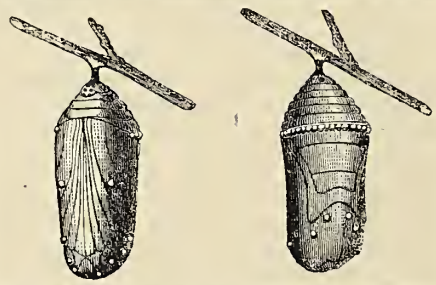


Fig. 2.—CARPENTER BEE.

A BEAUTIFUL JEWEL.

Nothing among the costly jewels at the Centennial, can be more truly beautiful than this, and yet it was only one form of a rather common insect. Figures 4 and 5 are two views of this "jewel," of real size. You must imagine it to be of the most delicate clear pale green, of a color only seen in some rare minerals, such as jade; then it is hung to a twig by the blackest of all black little stems; at the widest part there is a row of golden dots, placed closely together, and as if to make them show all the more brightly, there is just under them an intensely black line, and below these are a few scattered golden spots. When I say golden, I do not mean merely yellow, but shining with exactly the luster of the metal, and much more like real gold than much of the cheap jewelry that is worn. Of course the spots are not gold, nor is there any metal about them, but the effect of the skin upon the light, produces that appearance. This beautiful object is the pupa or chrysalis of the common Archippus butterfly. The caterpillar feeds upon the milkweeds, and when full grown, is a black, white, and yellow "worm," about two inches long, and with a pair of black horns at each end. When it goes to rest, to get ready to come out as a butterfly, it hangs itself up, doubles into a small space, and after throwing off its old skin, appears as in figures 4 and 5. I do not know of anything about insects that is more wonderful than that such a large caterpillar should pack itself away in so small a space, or that out of this little jewel should come an orange and black butterfly, with four inches spread of wings. By examining the pupa closely, you can see under the half-transparent skin, the rings of the body and the folded wings of the future butterfly. Another thing strange about it is, that all this beauty lasts only for about 10 days, for the change from caterpillar to butterfly takes place in that time. All this gilding must be of some use to the insect; the rough case of the Bag-worm deceives the birds, and I think that this green and golden pupa case must so astonish the birds, that they stop to admire it and forget that it may be good to eat. In some parts of the country these butterflies are so numerous that it is said that there are sometimes *millions* of them in swarms. How wonderful to think that each one of these came from such a beautiful case as I have described!



Figs. 4 & 5.—CHRYSALIS OF ARCHIPPUS BUTTERFLY.

The talk about insects has taken so much space that the other letters must wait. Do not think that questions not answered at once are lost or forgotten. I have a nice "pigeon hole" in my letter case which is marked "B. and G.," and all your letters are safely kept until I can find it convenient to reply.

Aunt Sue's Puzzle-Box.

WORD PUZZLE.—ACROSTIC.

My first signifies "the grace or mercy of The Lord."
My second signifies the same as Joshua, "a saviour."
My third signifies "a rose."
My fourth signifies "a cluster of figs."
My fifth signifies "made of stone."
My sixth signifies "rewarded."
My initials form the name of a river called "River of Judgment. My finals for the name of a man signifying "Beautiful." J. E. G.

NUMERICAL ENIGMA.

4, 5, 6,—6, 2, 4, and 1, 5, 3, 3,—1, 2, 8, 4, 3, 9, 4, 4, three little boys, lived in the city of 1, 2, 3, 4, 5, 6, 7, 8, 9. They went out one evening to play 1, 2, 3, 3, and when they returned their father (who, by the way, was a very 4, 2, 3, 3, man, and sometimes as cross as a 1, 9, 2, 8,) said to them that they could never go out to play, 6, 7, 8, 9, if they were ever so 3, 2, 4, 9, again; and he gave 4, 5, 6, (a little 6, 5, 4, 9, of a chap) a 1, 2, 4, on his head, although he was the least to 1, 3, 2, 6, 9. He began to 8, 7, 2, 8, and said he did not know what 4, 5, 6, 9,—5, 4, was. His sister 6, 2, 1, 9, 3, a lovely 6, 7, 8, 4, 2, 3, came and comforted the little fellow. Although she was a little 3, 2, 6, 9, she walked a 6, 5, 3, 9, to school, every day. MAY.

PIES.

1. Detuitrag si het isafret lobmoss chhwi gnirsps morf eth olus, dan eht earth fo nam howntck onne rome trangfar. Wehil sit potennop, edituginrat, si a ledday dewe, ton noly noginisop ni isfelt, tub greatginnimp het vrye stopherema ni chhwi ti worgs thiw tidef sprova.
2. Heret si on olary dora ot nalrengi. CHARLIE G. B.

SQUARE WORD.

1. A bird. 2. A cavity. 3. A metal. 4. To dispatch. NIP.

DECAPITATIONS.

1. Behead one animal and leave another.
2. Behead one musical instrument and leave another.
3. Behead one bird and leave another.
4. Behead an animal and leave a grain.
5. Behead part of a tree and leave a boat.
6. Behead a piece of wood and leave a fastening.
7. Behead a package and leave a beverage.
8. Behead a country and leave something unpleasant. ISOLA.

DIAMOND PUZZLE.

The central letters form a river in the United States.
1. A quarter of a cent. 2. To assign. 3. A boat. 4. A man of great power. 5. Genuine. 6. A river in the United States. 7. A county in Kentucky. 8. A county in Tennessee. 9. To traduce. 10. To lay. 11. Part of a trunk. BILLY BUTTON.

CONCEALED BIRDS, ANIMALS, FISH, AND FRUIT.

1. Charles had a very fine tool-chest.
2. He gave me a monkey-wrench yesterday.
3. It had a particular kind of screw.
4. He is always trying to do good.
5. Beer from the tap pleases many an old toper.
6. Pat routed a flock of geese on the meadow.
7. He was engaged in spearing fish.
8. He can't elope without being detected.
9. He will either have to abscond or die.
10. Cato's soliloquy has been often quoted.
11. They had permission to range around the neighborhood.
12. They used slime for mortar. JOHN M. WHEATLEY.

DROP LETTER PUZZLE.

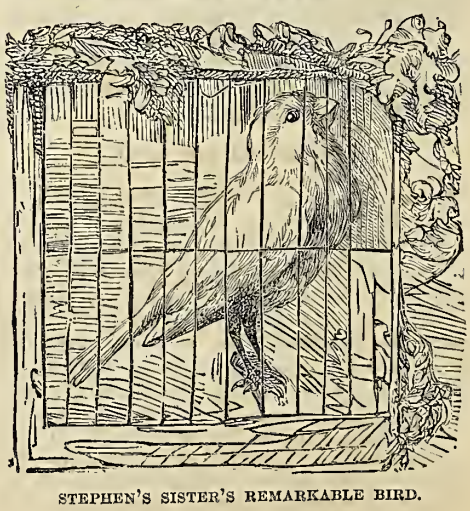
O t i g h b l s n h c c i g i,
C l i g h r s i g a d o r y r;
H u s b n s o n o h r v r f o
A d l n t e k a y n g o—
T u e ' n i c d y i s o u n h W s
W e t e e l s a l i g s o c c t r s l

Thanks for letters, puzzles, etc., to E. B. E., C. M. J., Grace H. K., Annie M. M., Lydia J. R., Alice A. B., Mattie McB. A., Clara D. L., Joe, Harry G., Guy C. N., Ernest F. D., and C. D.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.,* and *not* to 245 Broadway.

A Remarkable History.

Here is a remarkable history. It is about Stephen and the bird. You know that the savages, who do not have letters, use pictures instead, and picture writing is the only kind of writing they know anything about. This being a remarkable story, it needs both pictures and writing—or what is the same thing, types. Once there was a boy named Stephen. Stephen was a remarkable boy. Stephen had a sister—never mind what her name was—she was a remarkable sister. Stephen's sister had a bird—never mind what kind it was, it was a remarkable bird. If you don't think so, here is its picture.



STEPHEN'S SISTER'S REMARKABLE BIRD.

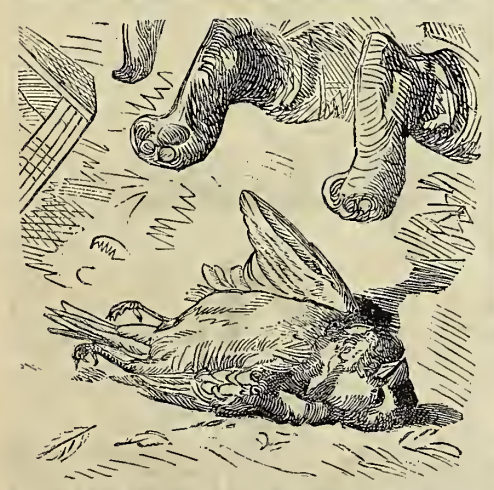
One day the sister was going away from home; she was afraid to leave her bird. Stephen's sister had a remarkable reason for being afraid. This was the reason.

STEPHEN'S SISTER'S REMARKABLE REASON.

So Stephen's sister made Stephen promise that he would watch the bird while she was gone. Stephen was not only a remarkable, but a promising boy, and he promised. This is the way that Stephen watched.

STEPHEN WATCHING THE REMARKABLE BIRD.

As Stephen watched, he dreamed. He had a remarkable dream—strange things happened. Some dreams come true. This is what Stephen saw at the end of his dream.



THE REMARKABLE END OF STEPHEN'S DREAM.

The Fox, the Goat, and the Carrots.

This is a fable, translated from the French. Do you know what a fable is? The word is sometimes used to mean a falsehood or untruth, but it has another and a better meaning—a short story that is intended to teach some good lesson. When your grand-parents were children, there were but few books for boys and girls, and Æsop's fables were then read by young as well as old, and very good reading they were. It is not known who wrote Æsop's fables; there was a celebrated writer of that name who lived about 600 years B. C., but it is supposed that the fables called his were written by others. La Fontaine, a Frenchman, was a writer of charming fables, and there have been others in other countries. In Æsop's fables the story is told, and then its meaning added in a "moral," but we think that the story should be so well told, that every one who reads it should see the moral without being told. We do not know who wrote this fable, but it will no doubt remind many a boy and girl of times when they have been as foolish as the fox and the goat.

Once a fox and a goat were walking together along a road, and saw a sack lying against a hedge.

"What do you think is inside that sack?" said the goat.

"I will go and see," replied the fox; and, putting his nose into the mouth of the bag, tied tightly by a cord, he shook about the bag so much that the string at last gave way, and the finest carrots one could wish for fell out.

"They are for me," said the fox, "for I opened the sack.'

"Yes," said the goat; "but I gave you the idea, and if you touch them I will tear your sides with my horns."

The fox looked at the goat's great horns and showed his teeth.

The goat, on seeing the fox's teeth, thought within herself, "I don't much like that kind of weapon."

And the fox said to himself, "I will not expose my sides to those terrible horns."

After a minute's silence the fox said: "Why do we stand looking at each other? What is the use of that? Let us see which is the stronger. See, there are two heaps of stones. You shall take one and I the other. He who shall first throw down his heap shall eat the carrots."

"Very well," said the goat. So they went to their heaps of stones.

The goat put her legs firmly together, and struck with her horns so hard as to make a great noise, but the heap did not shake.

"Ah! you do not hit hard enough," said the fox.

The goat went three steps backwards, and ran at the heap with all her might. But, crack! her horns broke!

When the fox saw that he began to skip about. "Oh, my dear friend," said he, "the carrots belong to me now!"

"Not yet," said the goat, "you have not succeeded in your task yet. If you touch the carrots, I will tear your side with the stumps of my horns."

The fox looked at the goat, and said to himself, "She has one left still, which is almost whole; she will tear my sides with it."

"Well," said he, "I will knock down my heap, then; it is nothing for me."

The fox began to dig with his fore-paws until he had made a great hole in the ground close to the heap. The stones soon fell over into the hole, but, alas! they fell on the fox and broke his left paw.

Then the two looked at one another—the one with her broken horns, the other with his broken paw.

"Run after the carrots," said the goat, with a sneer, "I will give them up to you."

"I can not," answered the fox, "my paw hurts me too much. Take them yourself."

"That is just what I am going to do," said the goat, and she ran for the sack; but neither bag nor carrots were to be seen: while they were disputing, a man had come along and carried all away.

"Alas!" cried the goat, "how stupid we have been! If we had divided the treasure, we should have kept whole—I my horns, you your paw, and each of us would have had more carrots than we could eat."

The Spring under the Willow.

BY LILA V. NORTH.

Once, a long time ago, a little boy named Charlie lived with his mother on the side of a green hill. His father had been a sailor, and was drowned in a storm at sea, leaving his wife and little boy only money enough to live on in their little cottage among the trees. Charlie was happy all the day long: he loved the trees and flowers, and the pretty wild creatures of the woods and fields were all his friends; but best of all he loved the spring under the willow. In the hottest summer weather the water was always cold, and three times a day Charlie went to fill his little pail for himself and his mother.

One day it was very hot, and the sun poured down its heat every moment, while there was no kind cloud to shield the poor earth from its rays. Toward noon Charlie took his little pail to go for the water. Out from the shade of the maples around the house he went, and down the long, bare hill-side. Charlie thought there must surely be a stone in the crown of his straw hat, it weighed so heavily, and the willow, where the spring was, had never seemed so far off. He was very glad to get under its shade at last, and to find the spring as cool and fresh, as though it had never heard of being warm. Charlie tossed off his hat, and threw himself down on the mossy ground beside the spring. The willow hung over it, and shielded it with all its long boughs from the sun, so that when Charlie looked in, all he could see at first, were the bunches of slender branches, with their long leaves, looking like the green hair of the mermaids that his father used to tell about. But after a while his eye grew accustomed to the darkness, and then he found he could see to the very bottom of the water. And hark! what was that; was it the noise of the little brook tumbling over the stones, or was it fairy laughter? Certainly it must have been laughter, for there, looking up at Charlie from the bottom of the spring, was the tiniest, brightest, merriest little man in the world. He was dressed all in green and silver, and for a cap he wore a white morning-glory, with a long willow-leaf as a feather.

"Good morning!" he called out to Charlie, laughing and nodding, until Charlie could not help laughing too.

"How did you come there?" asked the astonished and delighted little boy.

"Come here? Why, I live here. I am a water-fairy, and I own this spring," said the little man, and somehow his voice sounded like the soft, clear noise the brook made, as it ran out of the spring, and raced away over the pebbles.

"I should think you would get wet," said Charlie.

"Wet! Of course—I want to be wet; it's dreadful to be dry. Come down here, and see how cool it is."

It did look cool; the bottom of the spring was silvery sand, and the sides were white rocks. No hot sunshine found its way down there.

"Won't I be drowned?" said Charlie, hesitating.

"Am I drowned?" asked the fairy, dancing about and laughing, until he sent several little bubbles up to the top of the water. Charlie could not resist; without stopping to think twice, he jumped in. To his surprise, instead of sinking like a stone, he went down slowly and lightly, until he reached the bottom, and instead of being choked by the water, it seemed to him he had never breathed so easily before. His size, too, was greatly changed, he was now hardly as tall as the water-fairy, and was dressed in a suit of green and silver, like his. On his head was a morning-glory cap, and the fairy picked up a long willow-leaf from the bottom of the spring, and gave it to Charlie for a feather.

"Now I'll show you something worth seeing," said the merry little man, and taking Charlie by the hand, he led him through an archway in the side of the spring. Through this archway a stream rushed into the spring, and after they had ascended a steep place, down which it poured, Charlie found from whence it came. They were in a rocky cave. Oh, how beautiful it was! The walls and sides shone like diamonds, and in its center a beautiful fountain threw its clear water almost up to the roof, and from the fountain gushed the stream, which led into the spring. Charlie noticed along the sides of the cave heaps of what seemed little pearls, yet sparkling with colors, which a pearl never had.

"These are drops of dew," said the fairy. "I have been gathering them from the spray of the fountain. To-morrow look on the grass, and flowers, and cobwebs, and you will see them all."

Charlie thought he could have staid listening to the fountain for hours, but the fairy led him into another chamber, opening from the first. Here the floor was covered with little bags, and each bag was labeled with the name of a flower. White Clover, Red Clover, Buckwheat, Yellow Jessamine, Honeysuckle, Orange Blossoms, Charlie saw all these, and many more. "These are bags of honey for the flowers," said the fairy, "as soon as a flower opens, I send some one to pour a bag of honey into it. The bees know it, and learn to watch for the fresh flowers. And now I'll show you something still more wonderful." So he led Charlie into another chamber, where there were heaps of jewels of all kinds. "These are for the fishes and insects to wear," said he.

"I never saw them have any," said Charlie in surprise.

"Ah! you don't look," said the little man, "that's the reason I brought you here."

Just then Charlie stopped suddenly, and listened a moment. Faint and far away—oh, so far away—he heard some one calling "Charlie! Charlie!"

"I must go," he said, "it is my mother."

"Oh, wait a moment," said the fairy.

"No—thank you for your kindness, but I must go," he said, and running into the cave of the fountain again, he plunged into the stream, and was carried into the spring. With all his might he leaped upward, and then a mist came over his eyes, and he knew no more, until he waked on the mossy ground, and found his mother bending over him.

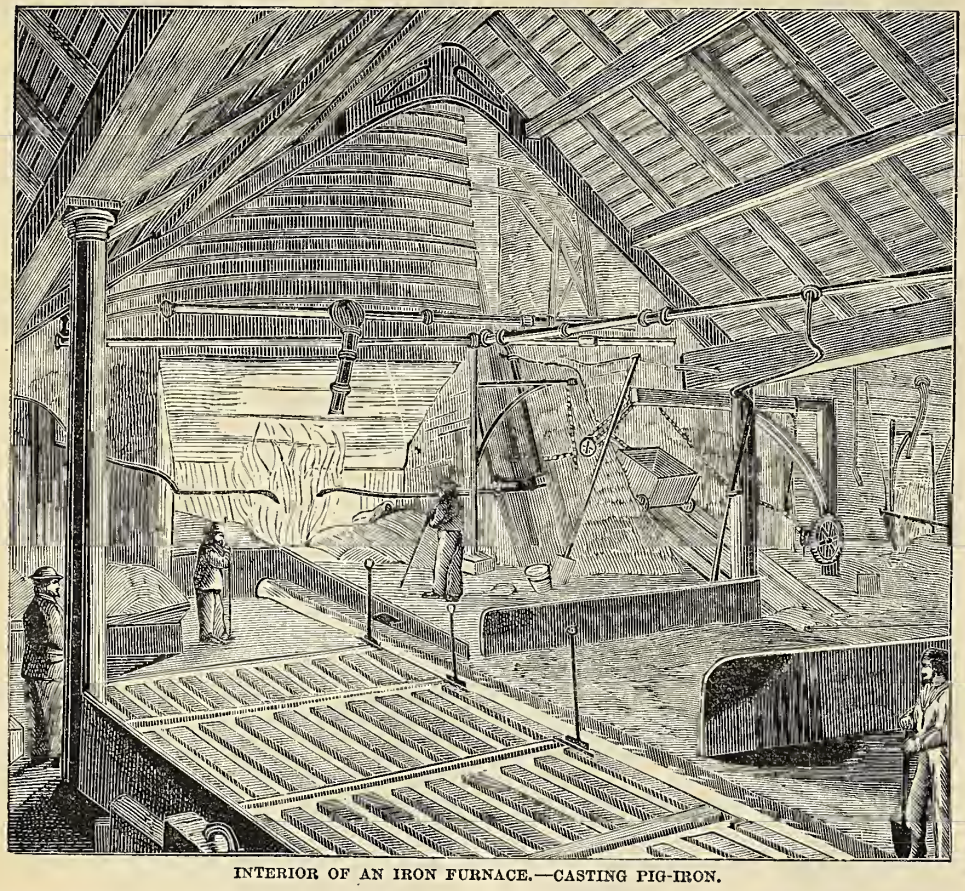
"Where's the water-fairy," said Charlie sitting up.

"Don't try to think," said his mother, "you must have had a sunstroke. Do you feel better now?"

"Oh yes," said Charlie, "but I haven't had a sunstroke, I've been down in the spring."

His mother did not believe him, but Charlie knew it

was true, for when he looked into the spring, there was his green feather at the bottom, and the next time he found a locust, he discovered an opal in its head, which he was sure was one of those he had seen in the fairy-cave when he visited the Spring under the Willow.

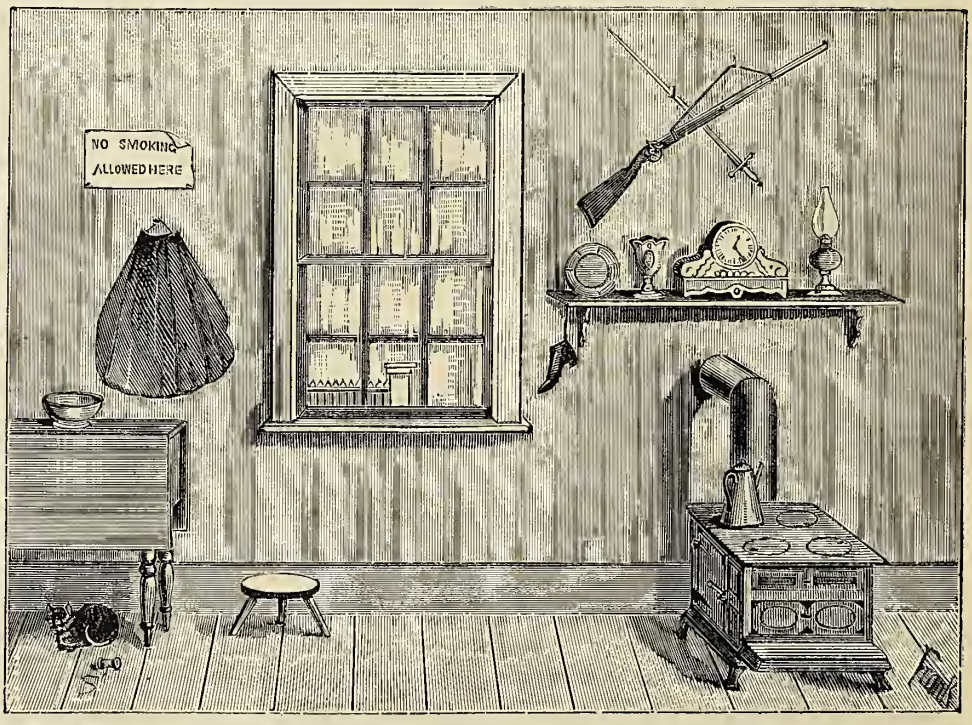


INTERIOR OF AN IRON FURNACE.—CASTING PIG-IRON.

The Doctor's Talks—About Iron and Steel.

Little did the boy think, who asked the question as to the difference between iron and steel, that he would have to read so long a reply. But a brief dictionary answer would not tell much, and when I am obliged to describe everything about it, because boys and girls are not apt to know much about chemistry, it takes a great while. Let us see how far we have reached: The iron in the ore is usually mixed with oxygen, and we separate the iron by taking away the oxygen, which we do by giving the oxygen a plenty of carbon (coal). The iron runs from the furnace where it has been separated from the ore as cast-iron, and usually the first step is to run the melted iron into rough bars, called pigs, as was described last month. Since that was printed, I have come across an engraving showing the interior of the casting shed to an iron-furnace, which I give here. You see on the left hand side the sand made into ridges with channels between them; these channels are the molds. Along one side of these there runs a long channel, which connects with these shorter ones, or molds, but to have the molds furthest from the furnace filled first, these are shut off from the long channel by gates, which are plates of iron with a handle, and look much like a spade. When the melted iron has filled the molds furthest from the furnace (a part of which you see at the rear), these gates are taken out, one at a time, to let the melted iron run into the other molds. This cast-iron is not pure, but contains, besides other matters that were in the ore, from two to five parts in the hundred of carbon, which it got from the coal. To change the cast-iron into wrought-iron, this carbon, or nearly all of it, and other impurities also, must be got rid of, which is done by burning it out; the melted cast-iron is exposed to a great heat with a plenty of air, and the carbon nearly all disappears, leaving the iron nearly pure in the form in which it can only be worked by hammering and welding. Cast-iron is brittle, hard, and can be melted, but cannot be welded; wrought-iron is tough, but soft, and cannot readily be melted, but can be welded. For many purposes a metal is needed that has all these qualities; that is tough and hard, and may be melted or welded, and this is found in steel, which is iron containing a much smaller quantity of carbon than cast-iron, and more than wrought-iron. The original way of making steel was to first make wrought-iron from cast-iron, and then turn the wrought-iron into steel by adding more carbon. A very curious process it is. A case is built of fire-brick, and in this are placed bars of wrought-iron, which are packed in fine charcoal; the charcoal being all around and between the bars, the case is closed tight, heated bright red, and kept at this heat for a week or more. At the proper time the case is allowed to cool, and the bars taken out; instead of being soft and tough, as when they went in as wrought-iron, they are now hard and brittle, and are turned into steel. Being roasted so long with the carbon, or charcoal, the iron unites with enough of it to produce these changes. Bars of steel produced in this way are uneven in quality, the outside of the bar having more carbon than the interior; so the bars are broken up and put into a pot made of black-lead (such as pencils are made of) and clay, and exposed to a strong heat; the steel melts, and is then cast into molds, and the bars thus made are of even quality all through. Steel contains from about one part in four hundred to two parts in one hundred of carbon. There are several other ways of making steel; one is by a mixture of certain different iron ores, which yield, by proper management, steel instead of cast-iron. There is what is called the Bessemer process, too difficult to describe to young people, but which makes steel so cheaply that it may be used for rails on rail-roads, instead of iron. However the steel may be made, the object is to get a mixture of iron with a small quantity of carbon. There are other substances besides carbon that alter the quality of steel, but you must wait until you get older before you can learn about these. One of the valuable things about steel is that it may be soft and tough, or exceedingly hard and brittle, according to the use for which it is to serve. If a piece of steel is heated red hot, and then allowed to cool very slowly, it will be soft, but if, when red hot, it is plunged into water or oil, it cools suddenly, and will be very hard and brittle. Another curious thing about steel is that it may be made of any desired hardness between these two points; for razors and surgeons' instruments much harder steel is needed than for saws and other carpenters' tools; this giving the steel any desired hardness is called *tempering*. The steel is first made very hard by heating it red hot, and cooling it suddenly in water or other liquid; it is then tempered by heating it to a less strong heat. Polished steel, when heated to about 430°, turns a very pale yellow, as the heat is increased it turns yellow, then with more heat brown, then purple, and finally to various shades of blue. The skillful workman knows if he heats the steel yellow, and allows it to cool, it will still be very hard; if he heats it until it is brown, and lets it cool, it will be softer, and so on; he knows by watching the color what the temper of the steel will be. You have noticed that watch springs are of a bright blue color; this color shows the temper best suited for springs; in most articles the color (which is the thinnest possible film upon the surface, caused by the action of the oxygen of the air) is rubbed off, but it is usually left upon the spring. Probably some boys, who have accidentally heated their pocket knives, and then found that they would not hold an edge, no matter how much they were sharpened, have learned something about tempering steel. There is very much that is interesting and useful to know about both iron and steel, that I have not been able to tell you; but what I have said will show you that the things that we have in such common use, as iron and steel, were only brought to their present perfection by a vast deal of labor. The boy's knife-blade, the girl's scissors and needle, if we could only trace them back, what a story they would tell! and how many heatings and meltings, roastings and forgings, have there been to produce these familiar articles. No wonder then that the savage prizes a bit of iron so highly. The Creator gives us gold in pure grains, but iron can only be had by skilled labor. Gold is barbaric. Iron and steel are tokens of civilization.

THE DOCTOR.



No. 457. A Transposition Puzzle Picture.—By transposing the letters of the objects in the above picture, you will find: 1. To hinder. 2. To burn. 3. A name sometimes given to an old inhabitant. 4. A French saloon. 5. A part of the neck. 6. A troublesome insect. 7. Troubles. 8. A toy. 9. Vehicles of thought. 10. Units. 11. A step. 12. A sail-boat. 13. Perfume. 14. To rescue. 15. A part of a flower. 16. A horned animal. 17. To perform. 18. A hard knock. 19. To warble. 20. A planet. 21. A tree. 22. Passion. 23. Articles of apparel. 24. The cry of an animal. 25. Instruments.—Now here is a chance for the puzzle readers to work.

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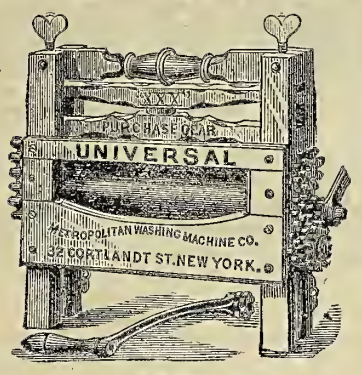

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New Peaches, American and European varieties, a large stock of Pear and other Fruit Trees, &c.
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Apple Trees in large quantities, largely of Baldwins.
Peach Trees, 1 year from bud, by the 100, 1,000, or 10,000
Concord and other Vines, 1, 2 and 3 years old, unsurpassed in quality.
La Versailles and Cherry Currants in large quantities, one and two years old.
Apple Seedlings, 2 years old, and a general assortment of other Choice Nursery Stock. Send for price list.

Address **STEPHEN HOYT & SONS,**
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CHAPMAN & VAN WYCK,
(Established 1849),
DEALERS IN
PERUVIAN GUANO
EXCLUSIVELY,
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By mail, post-paid, to any address.	*Each.*	*Per doz.*
Concord, Ives, Hartford, Catawba, Iona.....	10c.	$ 1.00
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Brighton (Red), Elvira and Lady (White)...	$1.25	12.00

All first-class, and warranted to reach purchaser in good order. Also **Trees, Small Fruits, &c. Wholesale rates very low** to Nurserymen, Dealers, and large Planters. Send stamp for Descriptive List. Price List **free.**

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Seeds, Flowers, Plants, and Trees.

First quality and strictly reliable. **Low Prices. Six Pkts. of Seed free,** as samples, for two 3-cent stamps. Circulars mailed to all applicants. **WRITE TO-DAY.**

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8 Grape Vines, 5 varieties, for.....$1.10
75 Strawberry Plants, 5 varieties.....$1.10
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By mail post-paid. Catalogues free.

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Blackberry, Gooseberry & Strawberry

Plants, choicest kinds, for sale by **E. P. ROE,** Author of "Culture of Small Fruits," "Play and Profit in my Garden," &c. Send for Circular.

Address **E. P. ROE,**
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PLANTS, STRAWBERRY, 100 or less, Prepaid by Mail.

	Doz.	100.	1,000.
GREAT AMERICAN, large.....	$3.00	$12.00	$120
CUMBERLAND TRIUMPH.....	1.00	5.00	20
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MONARCH OF THE WEST.....	.40	1.00	4
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JUCUNDA or No. 700	.40	1.00	6
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DOOLITTLE BLACK CAP RASPBERRY.....	.30	1.00	8
BRANDYWINE AND HERSTINE HARDY.....	.50	2.00	12
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The most profitable and earliest red raspberry grown. Over $1,000 per acre. By mail, post paid, 75 cts. per doz., $3 per 100.—Per express, $2.50 per 100, $15 per 1,000.
Wholesale and retail dealers and growers of all kinds of nursery and greenhouse stock and seeds. Send for catalogue.

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WE offer to the trade for fall of 1876, a large stock, especially in the following:
Apples, including Tetofski and Marengo, Plums, Peaches, Cherries, Wild Goose Plums, Currants, Gooseberries, Raspberries, Strawberries, etc.
We are prepared to offer inducements, and solicit correspondence.

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Finest Large Flowering.

3 plants, white, red, and double red, for.....50 cts.
12 " " " " " " " $1.50
By mail, post-paid.

Imported Dutch Bulbs, Flowers for the House, Small Fruits, &c., at reduced rates. Catalogue mailed free to all applicants.

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To Nurserymen, Dealers, and Planters. We offer a full assortment of thrifty, well grown stock, largely of Apple, Peach, Plum, Apricot, Cherry, (including *Luelling*, the largest cherry known) Brandywine Raspberries, and ornamental trees. Special rates given for Baldwin and Fallawater Apple trees. In large quantity. Prices low. Address

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LARCH & EVERGREEN TREE SEEDLINGS.

One of the largest and best nursery grown stocks in the U. S. Cheap, good; small sizes, suitable for wind-breaks, screens, ornament, and timber-belts for orchard protection. Send for wholesale price per 100 and 1,000.

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We send Plants of tried Varieties of Small Fruit Price list free. | **THE DOLLAR NURSERY.** | Cheaper by Mail, Post-Paid, than others by Express. LAPHAM & ANTHONY, Clayton, Del.

THE GREAT AMERICAN STRAWBERRY and **DELAWARE RASPBERRY,** the largest and best. Millions of Trees and Plants at **Pomona Nursery,** Send for circulars. WM. PARRY, Cinnaminson, N.J.

The Largest and most Complete Stock of Fruit and Ornamental Trees in the U. S. Catalogues sent as follows: No. **1,** Fruits, with colored plate, **15** cts.; plain, **10** cts. No. **2.** Ornamental Trees, etc., with plate, **25** cts. No. **3.** Greenhouse; No. **4.** Wholesale, and No. **5,** List of New Roses, **Free.**
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Large and most desirable stock ever offered of extra early and late Peaches; also of new and valuable late keeping Apples. Among the Peaches I offer Briggs' Early May, Early Alexander, Amsden June, Early Beatrice, Early Louise, Early Rivers, Thurber, Brandywine, Christiana, Newington Free, Nanticoke, Bilgen's Late Oct. In Apples extra late keepers: I name a few, and refer to my Catalogue for a full list—Mann, Lawver, Nero, Stark, Holly, Bachelor, Gibbs, and Peidmout Pippin, with full list of all that is desirable among old varieties. Also an immense stock of all kinds of trees and plants usually found in a first-class Nursery. Catalogue, with descriptions, testimonials, rotation in ripening, with much valuable information, gratis. I have a fine stock of thrifty, light, young stock, suitable to go long distances via Express.

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FOR THE MILLION.

Largest stock in the West. Extra quality. Packed to go safely any distance. Satisfaction guaranteed. A full assortment of other Trees, Shrubs, etc. Prices reduced to suit the times. Send list of wants for prices.

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10,000 AMSDEN,

and 60,000 other varieties of Peach. 30,000 Wilson Blackberry. 30,000 Concord Grapes, 1 and 2 years. 200,000 Strawberries, largely Wilson, Chas. Downing, Triomphe de Gand, Monarch of the West, etc. Also Fruit and Ornamental trees, Hedge Plants, and general Nursery Products, very low. Send for circular to CHAS. BLACK & BRO.,
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CHOICE PEACH TREES for Fall delivery, $3 to $5 per 100. Apple trees, $8 per 100. Wilson's Early Blackberry plants, $12 per 1,000. Brandywine Raspberry plants, $10 per 1,000. Conover's Colossal Asparagus, $2 per 1,000. Strawberry plants by mail cheap. Packing free. Send for price list. **R. S. JOHNSTON, Stockley, Del.**

PEACH, APRICOT, & NECTARINE TREES, in large supply Best assortment. *Rates low* at the **New Brunswick (Nurseries), N. J.**
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Apple, Peach, Pear, and Plum Trees, and a general assortment of Fruit and Ornamental Trees, Vine, Shrubs, Roses, &c. &c. Small fruits, apple seedlings, and Osage hedge plants. The Tebo Raspberry a specialty. The *Tebo* is a new *early* Black Cap, earlier, fully as large, and more productive than Doolittle or Seneca, and of excellent flavor. Address

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To Nurserymen, Florists, Dealers, and Planters.

Our Wholesale Catalogue (or No. 3), giving sizes and prices of a full assortment of **Fruit and Ornamental Trees, Small Fruits, Shrubs, Vines, Hedge Plants, Hardy Herbaceous Plants, Plants for Florists' Stock, and Winter-blooming Plants and Bulbs,** with lowest prices for first class stock of **New Peaches, Grape Vines, Currant Bushes, Brandywine Raspberry, and Osage Orange,** is now ready for distribution. Free to applicants. **A. HANCE & SON,**
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European Larch and Evergreen Trees.

Both Seedling and Transplanted. All grown from seeds on our own grounds, and better and cheaper than imported stock.

European Larch and Evergreen Tree Seeds,

By the ounce, pound or 100 pounds. Send for Catalogue.

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A superb lot that will be sold below the market value. Also a splendid lot of

MAGNOLIA ACUMINATA SEEDLINGS.

Nursery grown, from six inches to four feet high, that we offer at a bargain. Price list free.

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A large stock very low. Send list of stock wanted and have it priced. Address

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Send stamp for our *Special Autumn Catalogue,* containing engravings, descriptions, and directions for growing these rare and lovely flowers, now first offered by me at wholesale or retail prices, GEO. W. PARK, Mt. Vernon, Ohio.

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Fruit and ornamental. A large and complete assortment. Trade list now ready, and will be sent to all who favor us with their address. Also descriptive list of fruits and hardy ornamentals, etc. **STORRS, HARRISON & CO., Painesville, Lake Co., O.**

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50,000 Norway, Sugar & Silver Maples,

Linden, Elm, and Ash, 8 to 10 and 10 to 12 ft. Very fine young thrifty trees, adapted to avenue, park, or lawn planting. Low prices. Estimates given. WM. H. MOON, Morrisville, Pa.

ROSES for Winter Blooming, fine strong plants by mail. **6 for $1; 14 for $2.** Post paid. Purchasers selection of varieties. Premium rose with each package, when 10 cents is added. Also Holland Bulbs, Basket and House Plants. Address Joseph T. Phillips & Son, West Grove, Chester Co., Pa. Fall catalogue free.

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The most powerful self-acting brake made, and yet is more simple and complete than any ever introduced for general use. The Brake has been fully endorsed by every farmer who has seen it operate. W. A. Armstrong, Sec'y Elmira Farmers' Club, writes: "A Committee of the Elmira Farmers' Club, consisting of Chas. Heller, John Bridgman, D. T. Billings, S. M. Carr, and M. H. Thurston, gentlemen fully competent to make intelligent judgment, gave the brake careful trial Aug. 21st, and reported unanimously: It is the best brake we have ever seen—prompt in its action—effective when required, and is exceedingly desirable for all farmers on hilly farms." See Illustration in Aug. *Am. Agriculturist.* Town, County, and State rights for sale. Please say where you saw this.

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WHEELER'S Insecticidors and Fertilizer Distributors

Patented July 20th, 1875.

These devices, attached to hose pipe of aqueduct, or force pump, and operated by water under pressure, and the Watering pot, constructed under the same patent, are the best ever yet devised for destroying insects, (potato bugs and currant worms not excepted), on plants under glass or in open air, or for fertilizing the same. **Fumigation Unnecessary. Warranted to do what is claimed for them.**

All these machines are on exhibit at Centennial Exposition, and can be seen in practical operation on the grounds. Price of Hose Distributor $5.00, Watering-pot, average size, $6.00. Compounds of Tobacco, Sulphur, Guano, in 5 lb. boxes, 15 cts. per lb., of Paris Green and Hellebore, 30 cts. per lb. All goods C. O. D. Highest testimonials with descriptive circular sent on application.

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for Grinding Bones, Pot Shells, Ores, Old Crucibles, Fire Clay, Guanos, Oil Cake, Feed, Corn and Cob, Tobacco, Snuff, Sugar, Salts, Roots, Spices, Coffee, Cocoanut, Tomatoes, Saw-dust, Flax Seed, Asbestos, Mica, Horn, etc., and whatever cannot be ground by other Mills. Also for Paints, Printers' Inks, Paste, Blacking, etc.

JOHN W. THOMSON, Successor to JAMES BOGARDUS, Cor. White and Elm Sts., N. Y.

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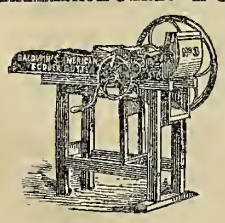

Best in the market. Don't purchase any other kind until you have seen and examined this. Send for Circular, containing Description and Price List. See Nov. No. of *Agriculturist.*

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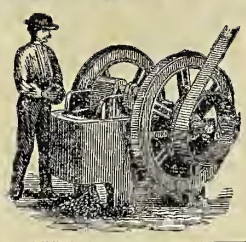
BLAKE'S PATENT STONE AND ORE BREAKER.



New Patterns, with Important Improvements and Abundant Strength.

For reducing to fragments all kinds of hard and brittle substances, such as STONE for making the most perfect McADAM ROADS, and for making the best CONCRETE. It breaks stone at trifling cost for BALLASTING RAILROADS. It is extensively in use in MINING operations, for crushing

IRON, COPPER, ZINC, SILVER, GOLD, and other ORES. Also for crushing **Quartz, Flint, Emery, Corundum, Feldspar Coal, Barytes, Manganese, Phosphate Rock, Plaster, Soapstone, etc.**

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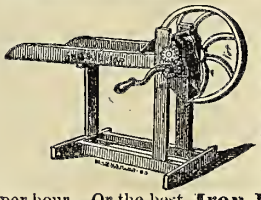
International Exhibition of Products of the Dairy at Hamburg in February, 1877.

Programme of this Exhibition may be had gratis of the Secretary of the undersigned Committee.
Dr. Richard Seelemann, No. 25 A. B. C. Strasse, Hamburg. *The Executive Committee.*

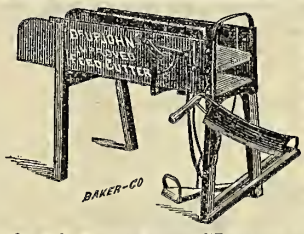
Cider & Wine Mills, and Presses.

HICKOK'S KEYSTONE CIDER MILL.
EXCELSIOR CIDER MILL.
HUTCHINSON'S FAMILY CIDER MILL.
SCREWS, PRESSES, GRINDERS, Etc.

Depot for the sale of the above Mills, in New York City, **60 Courtlandt St.**
Send for Circular. **H. B. GRIFFING.**



Do you want for your own use, or the Agency for the best **Self-Feeding Hay, Straw** and **Stalk Cutter,** in America? $16.00 Size by *HAND-POWER,* cuts 30 bushels per hour; $19.00 Size cuts by *POWER,* 180 bushels per hour; larger Sizes, 2 tons per hour. Or the best **Iron Handle Lever Cutter,** for Straw or Stalks. $10.00 Size cuts 20 to 50 bushels per hour. Machines delivered at **Cincinnati, Ohio,** or **Chicopee Falls, Mass.,** as desired. Need not be paid for till tried on the farm, and found satisfactory. Allowance made for freight. Circulars free. **WARREN GALE, Chicopee Falls, Mass.**



We ask the attention of Dealers and users to the merits of this machine. Cheapness — Durability — ease of Working and Keeping in Order. Send for Sample Machine at wholesale price, or description and price list. TYLER, TURNER & CO., Sole Manufacturers, **Kalamazoo, Mich.**

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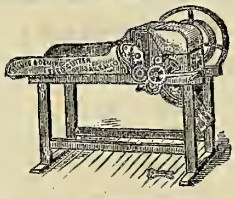
If you want a Hay, Straw, or Stalk Cutter, see the "Common Sense," the only perfect cutter ever made. It has taken the First Premium in 1875 at the New Jersey State, Ohio, Indiana, Illinois, Iowa, and the Great Mississippi Valley Fair at St. Louis; in 1876 at Rochester and Utica Fairs, (only fairs yet heard from this fall,) a Silver Medal. There is *no cutter compares* with it. For Circulars and prices address **A. B. COHU,** Manufacturer, 197 Water St., New York.

THE SILVER & DEMING FEED CUTTER



Has no superior in the market. Celebrated for the great capacity, ease of running, and its adaptability to all kinds of work. We also manufacture Horse Powers, Sawing Machines, &c. Send for Circular. **SILVER & DEMING Mfg Co., Salem, Ohio.** Location at Centennial, Q23 Agricultural Hall.

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SELLS AT SIGHT.

No cold or sore fingers. Can be used with or without mittens.—Last a life time.—Taken 6 Premiums.—One sample, 35 cts.; two for 60 cts.; 4 for $1.00.

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Soldering Iron, size that tinmen use—ready for immediate use. Bar of Solder—box of Rosin, and directions that will enable you to do your mending, solder up and open canned fruit—all sent by mail postage paid on receipt of **$1.00.** J. W. BAKER, 821 North 2nd St., Philadelphia, Pa.

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The only forged ox-shoe made with *concavity* to fit hoof, and the best and cheapest.

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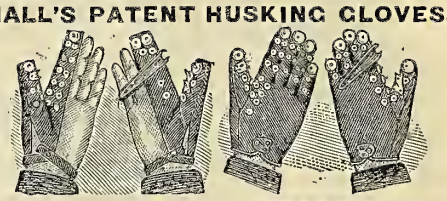

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The best and most economical husker in use, over 200,000 sold. Made of the best calf leather, shielded with metal plates, making them last five times longer. Husk faster and easier than any other husker. Sizes for men—Ex. Large, Large, and Medium—for women and boys small—for both right and left-handed persons. Prices, pre-paid, Full Gloves $2.25, Boys, $2.00. Half Gloves $1.15 per pair. We also manufacture and recommend

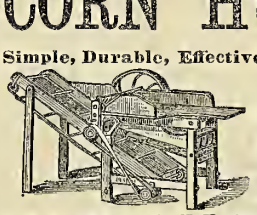
HALL'S PATENT HUSKING PIN.

Made of best cast steel, in most approved form, and provided with straps ready for use. Unquestionably the very best husking pin in use. Price, pre-paid, 20 cts., three for 50 cts. Ask your merchant for them, or address, with price,

HALL HUSKING GLOVE CO., 145 So. Clinton St., Chicago, Ill.

PHILIP'S SPIRAL CORN HUSKER.

Simple, Durable, Effective, and works rapidly.



This machine, improved and perfected, does its work thoroughly, picking the corn from the stalk and stripping every ear, large or small, soft or hard, completely of its husks and silk. Any ordinary two-horse power will run it.

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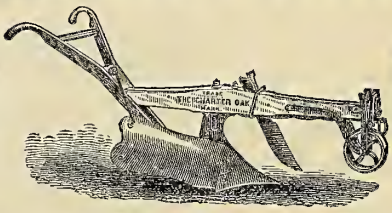
Corn Sheller and Cob Separator—"The Victor." First prize at Rochester and Utica Fairs, Sept., 1876, also at Ohio State Fair. It is recognized as the Standard Sheller wherever introduced. Send for Circular, before buying any other sheller. A. B. Cohu, Manufacturer, 197 Water St., N. Y.

THE CHARTER OAK SWIVEL PLOW.

SOLE MF'RS.



The Only Perfect Swivel Plow.

The Season of 1875 has proved by actual use of over 300 plows that it has no equal.

Send for illustrated circular with full particulars to

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FLAX & HEMP BRAKES.

MALLORY & SANFORD'S PATENT. The best in market, and largely used in this country and Europe. For sale by JOHN W. QUINCY, 98 William St., N. Y. City.

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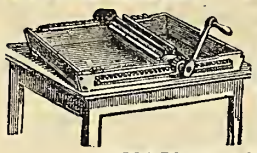

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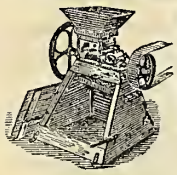
BUTTER and **CHEESE** Coloring, Extract of Cheese Rennet, used by the Largest Dairies in Europe and America. Send for Price and Circular Free. Sole Agent for the U. S., Mrs. B. SMITH, 327 Arch St., Philadelphia, Pa. Dairymen would do well to give this a Trial.



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Grinds all kinds of grain rapidly. Is simple, durable, and cheap. Is suited to all kinds of horse-powers. Every Farmer should have it.

Send for Descriptive Circular.

WM. L. BOYER & BRO.,
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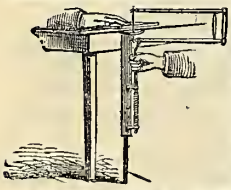
Twelve Farmers Wanted

In every Town in the United States to buy our **$2.50** and **$3.00 WORKING SUITS.** Used either for suits or overalls according to the weather. Send length of inside seam of pants and waist measure. To clubs of **twelve** or **more** we give same terms as to agents.

CHAS. A. BALDWIN & CO.,
New Haven, Conn.

N. B.—The Editors of this Magazine appreciate their excellence.



Send $2.75 by mail to S. B. Fuller, Lynn, Mass., and receive in return the best Jig-Saw in the world, warranted to do as good work and as much of it as any of the high cost machines in the market. Parties visiting the Centennial should not fail to see it on exhibition in Machinery Hall. See B—9, Column 67, No. 12,203, with samples of its work, and leave an order for one, to be sent by mail. Send for Circular.

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AGENTS WANTED for an article of merit wanted in every house, store, and office. So cheap that every one will buy. The Magic Chimney Cleaner, Dish Washer, Cork Puller, and Duster combined. Samples by mail postpaid, 15 cts. each; 2 for 25 cts.; 5 for 50 cts., or 12 for $1.00. Big inducements to Agents. 32-page catalogue for stamp. Write at once to the HUB NOVELTY STORE, 52 Kilby St., Boston, Mass.

GARDEN ENGINE AND FIRE EXTINGUISHER.—Protects Buildings from Fire, and Trees, Vines, etc., from Insects. Throws water 50 ft. Easily carried. No Dwelling, Country Home, or Factory should be without the Fountain Pump. Send for large Illustrated Circular. J. A. WHITMAN, Sole Proprietor and Manufacturer, Providence, R. I.

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65 of the prettiest Visiting Cards you ever saw, with your name neatly printed on them, sent by return mail, upon receipt of 25 cts. and a three-cent stamp. You will have samples of Glass, Marble, Snowflake, Damask, Repp, Tinted and White Bristol. The stock shall be first-class. I have some of the most particular and expert printers to be obtained in the country, and employ no inexperienced boys to turn off cheap work. No blurred or imperfect work leaves my establishment. Try them and you will be pleased. Write plainly, and give full address.

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YOUR NAME neatly printed on 40 fine Bristol Cards (7 tints) for 10 cts. and 3c. stamp; on 50 Assorted Cards (no two alike) 30c. 20 Acquaintance cards, 12 styles, 10c. Agents' outfit, 25c. CLINTON & CO., Box 49, CLINTONVILLE, CONN.

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50 Visiting Cards, with your name finely printed, sent for 25c. We have **100** styles. **Agents Wanted. 9** samples sent for stamp. A. H. Fuller & Co., Brockton, Mass.

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Only the purest vegetable oils used in its manufacture. No artificial and deceptive odors to cover common and deleterious ingredients. UNRIVALLED FOR THE TOILET AND THE BATH. Used in bathing children, will prevent eruptions, keep the skin soft and smooth, contribute to health, and prevent disease. Does away with all powders, chalk or other emolients. A certain preventive of *chafing itching, &c.*, in babies, the causes of half the crying and crossness of babyhood. Worth ten times its cost to every mother and family in Christendom; packed in boxes of 12 cakes, of 6 ozs. each, and sent free to any address on receipt of $2.50. Address **B. T. Babbitt,** NEW YORK CITY.

☞ For Sale by all Druggists. ☜

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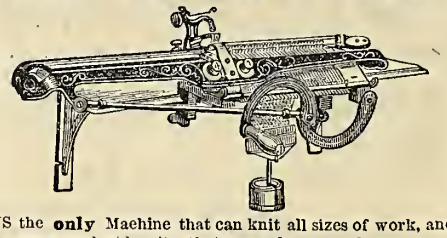

IS the **only** Machine that can knit all sizes of work, and narrow and widen it; that can **shape** and COMPLETE, without hand-finishing, seamless Hosiery, Gloves, and Mittens, or knit them in **all sizes;** or knit Ribbed, Double, and Fancy stitches for Underwear, Jackets, Shawls, Scarfs, etc. It knits over **25** different Garments. Over **100** per cent Profit in Manufacturing Knit Goods. The Farmer trebles the value of his Wool by converting it into Knit Goods. Women make **$5.00** a day with it. Agents wanted. Send stamp for Samples of work, and **reduced** Price-List. Address LAMB KNITTING MACHINE CO., at Chicopee Falls, Mass.; Cincinnati, O.; Chicago, Ill., or 922 Chestnut St., Philadelphia.

MICROSCOPES

Of all kinds and prices for *Colleges, Schools, Physicians and Families.* **MAGNIFYING GLASSES** for investigations in *Botany, Mineralogy, Horticulture, Agriculture, etc.* **LENSES, SPY GLASSES, TELESCOPES,** *etc.* 64 PAGE PRICE LIST, *fully illustrated, sent free.*

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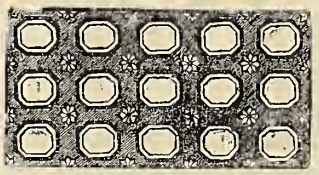

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STOVE DRESSING.

NO DUST! NO SMELL!

ALWAYS SOFT AND READY FOR USE WITHOUT A DISH.

It will do more work with less labor and expense, and give a more elegant and lasting lustre than any Stove Polish ever produced. *A stove can be dressed on delicate carpet without soiling it.* Send 10 cents for sample package.

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Established in 1852. Market reports and shipping directions sent *free* on application.

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GOODS TAKEN ON COMMISSION.

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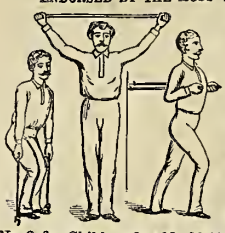
Goodyear's Pocket Gymnasium.

ENDORSED BY THE MOST EMINENT PHYSICIANS.



The Most Complete System OF PHYSICAL EXERCISE Ever Devised for Home Practice.

100,000 in use by men, women and children.

Used standing, sitting or reclining.

Hundreds of graceful movements.

For home, office, schools, hospitals.

Price List.—No. 1, for Children 4 to 6 years, $1.00. No. 2, for Children 6 to 8, $1.10. No. 3, for Children 8 to 10, $1.20. No. 4, for Children 10 to 14, $1.30. No 5, for Ladies and Children 14 years and upwards, $1.40. No. 6, for Gentlemen of moderate strength, $1.50. No. 7, used by Ladies, Children or Gents, $2.00. No. 8, for Gentlemen of extra strength, $2.50. Full set, *family use*, 1 each, (1 to 6) Two 7's and Two 8's, $16.00. Nos. 7 and 8 are fitted with a screw-eye and hook to attach to the wall or floor. A pair of No. 7, ($4.00), or 8, ($5.00), make a complete Gymnasium and Health Lift. Sent post-paid on receipt of price. Exclusive Agencies granted in unoccupied territory.

Exclusive rights to sell the Pocket Gymnasium afford the largest possible returns for small investments. Its sales are nearly universal wherever it is placed before the public and its merits fully understood.

For Illustrated descriptive circulars, terms, &c., address,

Goodyear Rubber Curler Co.,
P. O. Box 5,156. **697 Broadway, New York.**
RUBBER GOODS OF EVERY DESCRIPTION.

Self-Propelling Chairs For Cripples and Invalids

Can be *easily* propelled, either in or out doors, by any one having the use of hands. State your weight and send stamp for illustrated catalogue of different styles and priices.

Please mention this paper.

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Reclining Invalid Chair

ON WHEELS,

easily propelled by occupant, in or out doors. Best reclining one made. Send for circular. Exhibited at Phila., in Main Building T, 59, and made by

New Haven Folding Chair Co.,
New Haven, Conn.

THE BEST PAINT IN THE WORLD.

ANY SHADE FROM PURE WHITE TO JET BLACK, AND, AS IT IS MIXED READY FOR USE,

EVERY MAN CAN BE HIS OWN PAINTER.

The incorporation of RUBBER in our paint makes it *unequaled* by any other. It is unaffected by change of temperature, and is perfectly waterproof. It presents the finest possible finish, will not crack or peel off, and is in every way the "*Best Paint*" for either inside or outside painting, is from one-fourth to one-third cheaper, and lasts three times as long as the best lead and oil paints. The almost *unanimous verdict* of the many thousands who have used our paint is that it is *far superior* to any other paint in use.

Be sure that our TRADE MARK, (a fac-simile of which is given above,) **is on every package.**

The great popularity of and demand for our paint has necessitated the establishing of "*Branch Factories*," as follows:

No. 506 West street, New York City; No. 83 West Van Buren street, Chicago, Ill.; No. 210 South Third street, St. Louis, Mo.; and a Wholesale Depot at Wm. King & Bro., No. 2 North Liberty street, Baltimore, Md.

SAMPLE CARD AND PRICE-LIST SENT **FREE** ON APPLICATION.

DAY'S AUTOMATIC INCUBATOR.

Neatest, simplest, best. Heat entirely self-regulating. Provides for the young chicks. Capacity, 220 eggs. Price, $50. See July *Agriculturist* 1876. Address

DAY BROS. & CO.,
92 Linden Avenue, Baltimore, Md.

EVERYTHING FOR THE FARM.

Seeds, Implements, Machinery, and Fertilizers. New Catalogue, 200 Illustrations, mailed on receipt 10 cent stamp. **A. B. COHU,** 197 Water St., New York.

CENTENNIAL PRESENTS FOR THE LITTLE ONES.

INSTRUCTIVE. BEST GIFTS FOR AMUSING.

BEAUTIFUL. ALL SEASONS. INTERESTING.

Crandall's Building-Blocks

Can be made into forms of almost endless variety. The blocks are put up in neat, strong boxes, and a large sheet giving various designs of buildings, etc., accompanies each box.

Price—No. 1, $2.00; *by mail, prepaid,* **$2.50. No. 3, $1.00;** *by mail, prepaid,* **$1.25. No. 4, $1.00;** *by mail, prepaid,* **$1.15.**

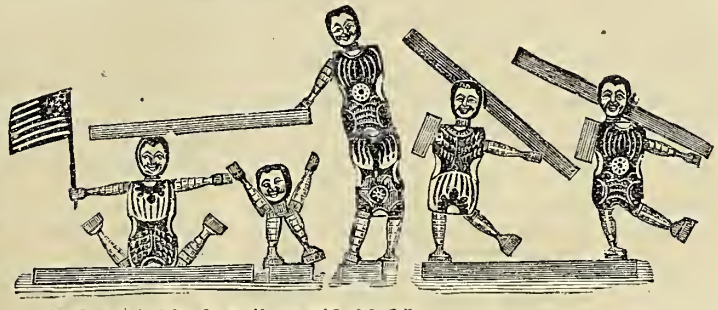
Crandall's Masquerade-Blocks.

Making 300 different and beautiful Combinations of Pictures, which are in very brilliant colors. They are not injured by washing, do not wear out, and afford endless amusement.

Price $1.00; *by mail, prepaid,* **$1.20.**

Crandall's Acrobats.

Full of fun and frolic, and most brilliant in costume. These are among the most fascinating and ingenious toys ever invented. The number of figures which can be made with the pieces in a single box is limited only by the ingenuity of the operator.



Price $1.00; *by mail, prepaid,* **$1.25.**

Crandall's Expression-Blocks.

With Letters on one side, Picture on the other. The Alphabet is the key to the picture which, when complete, represents the inventor in Dream Land. These Blocks are water-proof, and can be washed if soiled.

Price 50 Cts.; *by mail, prepaid,* **70 Cts.**

Crandall's Illuminated Pictorial Alphabet Cubes.

These Cubes are gorgeously colored, and will make over 500 beautiful combinations or figures. They are water-proof, odorless, and durable; put up in handsome black walnut boxes; and are most attractive to both young and old—an elegant present for the little ones.

Price $2.50; *by mail, prepaid,* **$3.00.**

Crandall's Menagerie.

One of the most wonderful and amusing things ever brought out for the entertainment of children. The six animals composing the menagerie are beautifully painted, and so arranged into 56 pieces in each box, that tens of thousands of most laughter-provoking figures can be made up with them.

Price $2.00. [*Purchaser will pay express charges. Box too large to go safely by mail.*]

Crandall's Alphabet-Blocks, Red, White, and Blue.

Tasteless, odorless, and water-proof. The letters are on red, white, and blue ground. All children are pleased with them. **Price 75 Cts.;** *by mail, prepaid,* **$1.00.**

N.B.—*If postage is not remitted with the prices, as above, the blocks will be sent by express at purchaser's expense.*

Orders from the Trade will be supplied on Liberal Terms.

ORANGE JUDD COMPANY, 245 Broadway, New York.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 367.

☞ Subscribe **this month for all of 1877,** and get **November and December** Numbers FREE. ☜

Winter Oats.—A Southern farmer sends the following account of four acres of red rust-proof oats, sown in the middle of November, 1875, in North Carolina. 360 bushels of cotton seed were scattered over the plot, and 9½ bushels of oats were then sown, the whole being plowed in with a light furrow. The oats grew very vigorously, and were harvested in July, yielding over 12½ tons of sheaf-oats, and more than 300 bushels of grain. The cost of seed, fertilizer, and labor, was $52; the value of the crop was $300. In March the oats were somewhat injured by the frost.

St. Louis Fair.—The sixteenth St. Louis Fair will commence on the 2nd and close on the 7th of October. $50,000 are appropriated by the Association for premiums. This fair has heretofore been remarkably successful, and the programme of the present year promises a show of equal interest to any previous one. Premiums of $3,200 are offered for cotton alone.

How many Eggs can a Hen Lay?—"W. L.," Cleveland, Ohio. That depends altogether upon the manner in which the hen is fed and kept. Hens have been known to have from 700 to 1,000 embryo eggs in the ovary, which would all have been probably developed in course of time, if the fowl had been properly cared for. A Brown Leghorn hen, 8 years old, has been known to have laid over 800 eggs, and is, we believe, still productive.

Foul in the Feet.—"S. H.," Agassiz Landing, British Columbia. The disease characterized by blisters between the hoofs of oxen, is what is known as "foul in the foot." It is the effect of mud, or wet, or filth in yards or stables, or sometimes of a disordered condition of the blood. It may be prevented by keeping the cattle dry, and in clean yards, or washing the feet, after having been necessarily fouled. It may be cured by giving a smart physicing with salts, eight ounces to a pound being used, according to the size of the animal, and by washing the feet with warm water and soap, and afterwards dressing the sores with a solution of one ounce of blue vitriol (sulphate of copper), or white vitriol (sulphate of zinc) in a pint of water. Or the vitriol may be ground up smoothly in four ounces of lard, and the mixture applied with a feather.

White Veal.—The Secretary of the Massachusetts Society for the Prevention of Cruelty to Animals, sends us some extracts from various publications, protesting against the cruel and unnecessary practice of bleeding calves, previous to slaughtering them. The *American Agriculturist* willingly joins in such a protest, but at the same time we do not believe that the public who eat the veal, are so much to blame, as the butchers, who practice the unnecessary and really injurious cruelty. Calves slaughtered upon the farm have flesh nearly as white as that sold by the butchers, and we never heard any objection made by purchasers of the veal. A popular practice in the trade is not easily set aside, and the trade themselves are the most stubborn in resisting innovations. We would suggest a legislative enactment, and its vigorous enforcement.

Remedy for Roaches.—"T. B. P.," Goldsboro, N. C. Wherever the Persian Insect Powder (*Pyrethrum*) can be procured *fresh*, it disposes of the insects in a single night. It is blown into every crack, and as soon as the roaches are touched by it, they come out and soon die. When old, or poorly kept, the powder is useless. Any druggist can get it for you. Some sprinkle powdered borax in the places which they haunt. Others take strips of cucumber peelings, of which they are very fond, sprinkle them with Paris green, and lay them on the floors at night. The strips should be taken up early in the morning and burned, and fresh ones laid down at night again. The dead roaches are eaten by their surviving relatives, who thus

fall into the same fate. Thanks for the sketch of the gun fence, which is a common one in many localities.

Weights of various Bushels.—"S. H.," Frazer River, B. C. The legal bushel is not the same in every locality, and varies according to law or custom. The most common measures are as follows: wheat and rye 60 pounds, corn 56, barley 48, buckwheat 48 to 50, oats 32, potatoes and roots, 60, clover 60 to 64, peas 60, timothy grass 44, orchard grass 12 to 14, red-top 12, blue-grass 14, lime and hard coal 80 pounds. The bushel in general use in the United States is the English or Winchester bushel, which contains 2,150.40 cubic inches, or 77¾ pounds of pure water at its greatest density, or 39 degrees. The Imperial bushel of England contains 80 pounds of water at 39 degrees, or 2,218.2 cubic inches, and is in use in the State of New York.

English Consumption of American Cotton.—It will surprise many persons who have supposed that the Southern States possess a secure monopoly of the English cotton market, to learn that American cotton is being rapidly supplanted in that country by other kinds. In 1860, out of 2,633,590 bales of cotton used in English factories, 2,241,590 bales were of American growth. In 1870, of 2,627,884 bales used, only 911,741 were American cotton. In 1860 England used only 176,668 bales of East Indian cotton; in 1870 there were 958,936 bales used, or more than were consumed of American product. The consumption of Brazilian cotton is now four times that of ten years ago, and 132,527 bales of West Indian cotton is now used, against only 6,384 bales ten years since. American cotton is no longer beyond the rivalry of East Indian cotton. But there are now in Georgia alone, over forty cotton factories, and others are building, and Georgia is a more profitable customer for Georgia cotton, than any foreign country can possibly be.

American Berkshire Record.—The Secretary of the Berkshire Swine Association, A. M. Garland, Esq., Springfield, Ill., informs us that applications for entry for the Second Volume of the Berkshire Record, will now be received. A circular containing suggestions and instructions, will be sent to applicants, also blanks for entries; copies of the first volume can be had for $3 00, postage paid. The creditable and satisfactory character of the first volume of the Record, will be a sufficient guarantee for the future volumes.

Side-Shows at Fairs.—To our notion one of the great blemishes to State and County fairs has been the various shows and mountebank venders that have been allowed within the grounds. We have seen within the enclosure of the New England fair exhibitions that we regarded as perfectly disgraceful, and had supposed that these, and other violations of propriety, were due to weakness and good nature on the part of the managers. To our surprise we find that the Berks Co. (Pa.) Agricultural Society, in their announcement for this year's fair, have a direct appeal to "Proprietors of Side-shows and Exhibitors of Natural Curiosities," offering every inducement to such to engage space on their grounds. We mention this with regret, and only cite this particular society as the first that we have known to encourage "side-shows." It is bad enough to have "Fat Women," "Snake Charmers," and "Double-headed Calves" outside the grounds, and we think that any society that can not hold successful fairs without catering to such things, had better omit them altogether.

Watermelons in Virginia.—Watermelons have been a success in almost every locality, but one grew so large in Virginia, that Justice Crutchfield had to arrest its career at 120 pounds, and send it to a station for the attention of the policemen. It was as large as a flour-barrel, and according to the account "It was a novel sight, though, to see three men eating off one slice, and to see another flaxen-haired policeman holding a piece between his legs like a bass-fiddle, and beginning at the top, trying to eat his way down.

Toads and 'Tater Bugs.—"A. H. G.," Sing Sing, N. Y., writes an account of his observations on the Colorado Beetle. What he says of the agency of the larva of the Lady-bird as a destructive agent, is well known, and we have long ago published it. Besides this he states that the common toad consumes a large number. He threw before the toad five beetles in succession, and each, as soon as the insect showed signs of life, was swallowed by the toad "quicker than a wink." We have always held the toad in great respect as an insect destroyer, and his fondness for the Colorado beetle increases our regard for it.

The Potato Bug Useful.—We are told that nothing that is, was made in vain. To be sure, there are many things of which utility is not their most conspicuous feature, and we have been some years in discovering that the Colorado beetle is useful as well as ornamental. We regard the so-called "Horse-nettle," *Solanum Carolinense*, as perhaps the worst of our agricultural weeds; though own brother to the potato, it has been repeatedly stated that the Colorado beetle would not feed upon it. We now have direct testimony from a correspondent in Fairfax Co., Virginia, that the beetles last year kept the plants so stripped of leaves that they matured no seed-balls, and came up much weaker this year. Who knows but after all the *Doryphora* may be a blessing in disguise.

Weed Named.—"R. E. S." The specimen sent is botanically *Erecthites hieracifolia*, and generally known as Fire-weed. It is one of the composite family, and springs up in great abundance in newly cleared land, especially if it has been recently burned over. It is very luxuriant where the soil is rich, growing higher than one's head, and on poor soil only a foot high. Its seeds are provided with abundant means of transportation by the winds, but it is not aggressive in cultivated grounds.

Valentine & Co., Varnish Makers, 323 Pearl St., New York, have adopted a novel method of making their products known. They issue a collection of a dozen or more silhouette engravings, of an excellence that will make them welcome to any household, with, of course, their card accompanying it.

Variegated Grape Leaves.—"V. L.," Palmyra, Wis., sends Concord grape leaves, which are quite ornamental, being yellowish with green veins. This is one of those variations, to which no satisfactory cause has been assigned, and is similar to that which in some plants is permanent, and gives them increased value as horticultural ornaments. We have seen other instances in our native grapes, and there is a variegated grape, of a species which has not edible fruit, that is permanent, and cultivated for ornament.

Breakfast Bacon.—"W. F. C.," Mar's Bluff, S. C. The bacon put up in strips, packed in canvass and known as "Breakfast Bacon," is the belly pieces of the hog, which are left after the roasting pieces or the mess pork is cut off for packing, cured in the usual manner and smoked. The bacon is thin and streaked with lean and fat, and the best of it comes from the Berkshire pigs, which have deep sides, yielding a large proportion of bacon. When home cured the pickle should have four ounces of sugar to every pound of salt used, and the smoking should be done with hickory brush or corn cobs.

Corn Husks.—"S. F.," Glenloch, Pa. The yield of dry corn husks from an acre of ground will be very variable. We have not measured it, but should not estimate it at more than 200 lbs. at the most. The husks may be baled and shipped as they come from the corn husking machine; the cleanest and best husks of course will sell at the best price.

Milk Mirror.—"W. W. W.," Ft. Madison, Iowa. The "Milk Mirror," or "escutcheon" in cattle is that growth of hair upon the back and inside of the thighs which, instead of lying smoothly downwards, points upwards and makes several curls at the parts where the direction of the hair is changed. The shape and extent of this upward growth of hair has been supposed to denote a special aptitude for producing milk. A book has been written on the subject entitled "Guenon on Milch Cows," in which the author gives his observations and deductions. In male animals the milk mirror is held to denote hereditary tendency to transmit milking propensities to the produce.

Sowing Steeped Seed.—"Reader," Richmond, Va. It is not proper to steep the seed so much as to soften it. All that is necessary is to use enough liquid to reach the covering of every grain and destroy any adhering spores of smut or rust, or to immerse the seed in the solution used only so long as will insure contact. If left for 24 hours before sowing the seed will be dry enough to sow with the drill. If it is made so wet as to adhere together, the seed should be sprinkled with dry lime, and may then be sown by hand.

Red Water in Cattle.—"A Subscriber," Greenville, Miss. The disease which has for its most marked symptom a highly colored urine, from which it takes the common name of "red water," is usually occasioned by derangement of the liver. This may be caused first by indigestion, as it is always accompanied by impaction of the manyplies or third stomach. It is also a marked symptom of what is known as Texan or Spanish fever, and is then also accompanied by impaction of the stomach. In this latter disease the liver and spleen are both extensively affected. The original cause may be an excess of food that is indigestible and unnutritious or acrid and irritating. A cure is difficult. The first remedy is a saline purge administered with copious addition of tepid water, such as 12 to 16 ounces of Epsom salts with an ounce of ginger. This may be followed with an ounce of hyposulphite of soda, daily, in the morning, and one ounce of salt and one dram each of sulphate of iron, ginger, and saltpeter, given in the evening for a week or ten days. Copious and frequent drinks of linseed tea should be allowed. In giving medicine to cattle, it should be poured slowly down the throat from a drenching horn or a tin vessel made in the shape of a cow's horn, but much larger at the base. Dadd's American Cattle Doctor is a useful book for every one who keeps cattle, sheep, or pigs. The new edition, 8vo., costs $2.50.

Composition of the Banana and Sweet Potato.—Some recent analyses made by M. Corenwinder of the banana and sweet potato, have given the following results. Bananas, when green, contain a large proportion of starch, which, when ripe, becomes converted into cane sugar; this latter in time is converted to a considerable extent into glucose. The composition of fresh and stale bananas are given as follows:

	Fresh.	*Kept for 18 days.*
Water	72.45	79.55
Cane Sugar	15.90	2.84
Glucose	5.90	11.84
Nitrogenous Matter	2.13	2.14
Cellulose, Pectine, etc.	2.58	2.58
Mineral Matter	1.02	1.02
	99.98	99.97

The composition of two samples of sweet potatoes was as follows:

	No. 1.	*No. 2.*
Water	86.45	69.10
Sugar	3.05	2.78
Glucose	.98	.75
Starch } Cellulose, Pectose, etc. }	8.56	14.72
		10.11
Nitrogenous Matters	.39	1.20
Mineral Matters	.55	1.32
	99.98	99.98

Muck from Long Island.—"S. M.," Manor, L. I. A sample of muck from Long Island consists largely of roots of grass and sedges, with partly decayed stems and leaves. This muck, or partly formed peat, would make an excellent absorbent in the stables, pens, or yards, and if mixed with fresh lime when first dug, would rot quickly and make a valuable fertilizer.

The Hardin System of Setting Milk.—"E. C. B.," Newtown, Conn. For a small dairy of 10 cows we would choose the Hardin plan of setting milk in preference to a dairy house and ice house connected with it. The former would be much cheaper and more economical. So far the experience with the Hardin refrigerator has been highly satisfactory.

A String of Questions.—"J. H. T." All your questions about sheep are answered in "The Shepherds Manual," by H. Stewart, price $1.50. To learn all you want to know you had better study that book. As an addition to stable manure, wood ashes and plaster, being probably most available, would be best to restore run down land. To use up old straw stacks spread them thinly over the meadows or fall grain fields, or more thickly over stubbles, and plow it in in the spring. A leaky roof may be made tight by covering it with Johns' roofing cement. To fit up an ice house see the *American Agriculturist* for December, 1875.

East Tennessee.—"J. B. C.," Berlin, Wis. East Tennessee is a mountainous country and consequently much cut up into narrow valleys, rocky hills and table lands. The climate is healthful and the winters are shorter and milder than in Wisconsin. Like every other country it has its drawbacks and advantages, its variety of soil and its contented and discontented people. Land is cheap in places, but good farms, well located, are no cheaper than similar farms in Wisconsin.

Why not Grow more Barley?—The successful growth of barley is only possible with good farming, just as large crops of roots need the best culture. To admit that one cannot grow barley is to admit himself a poor farmer. Our poor farming is then the reason why seven million (7,000,000) bushels of barley are imported into the United States every year. Barley is certainly a crop subject to much risk in marketing, but there is no better feed for horses; when ground it is excellent feed for cows producing rich milk; it is probably the best food of all for poultry, and when barley meal is mixed with boiled potatoes and fed to pigs, it makes the very best flavored pork more rapidly than any other food we have used. With all these advantages why not grow more barley?

Butter Making.—"H. T. R.," Montgomery Co., Pa. Willard's "Butter Book," price $1.00 and

his "Dairy Husbandry," price $3.00, give full information about dairy matters, including choice of cows and their general management. It would be well for you to procure and study these books. To tell in full how to make butter and cheese requires more space than we can give.

Farm Machinery in California.—"J. L.," Ipswich, Mass. It would be a loss of money to purchase farm machinery here to take to California, as whatever is wanted can be readily procured there. Besides it would be injudicious to purchase any thing at all, until it is known exactly what will be wanted there.

Fruit Raising in California.—"Six Young Farmers." Persons desiring to go to California together, had better send one of their number, upon whose discretion and judgment they can rely, to the chosen locality, to see it before they decide upon removing. If disappointed, the loss to the party would be trifling, compared with the possible ruin of the hopes that had been formed, and the cost of six persons going and returning. There is much mistaken enthusiasm in regard to fruit growing in California; it is a very risky business, and can only be moderately profitable even where entire success is met with, as the home demand is limited and transportation to Eastern markets very expensive, and often attended by loss.

Breeding a Young Mare.—"W. W.," Belleville, Ontario. A mare three years old may be permitted to breed without injury, if she is well cared for and not worked, but it is over-young, and only advisable in exceptional cases.

Value of Porgie Scrap.—"F. H. D.," Lowell, Mass. The value of fish scrap depends greatly upon its condition of dryness. If practically dry, it is of course worth much more than when saturated with water as it comes from the oil press. Mr. William Clift, in an address made at a meeting of the Conn. Board of Agriculture, in 1873, stated that he had used the dried scrap sold at $40 a ton, and considered it worth two-thirds as much as guano, which was then selling at $90 a ton; or $60 a ton. The raw scrap, very nearly dry, but not ground, is worth in the market from $20 to $25 a ton.

Book on Diseases of the Horse.—"G. W. W.," Wilmington, Del. Dr. Dadd's Modern Horse Doctor, is a very useful book on diseases of the horse; Dadd's American Reformed Horse Book, is a more comprehensive work. The price of the first is $1.50; that of the second is $2.50, by mail from this office.

Prices of Grain at Different Months.—The course of the market for wheat at different seasons of the year, is just now a very interesting matter for consideration. If there is a period when the best average prices are made, and this is the most convenient time for disposing of the grain, it is important to know when that season occurs. Although we would not accept the responsibility of advising any person when to sell his crops, yet it is safe to give trustworthy figures from market reports, which carry unquestionable weight with them. As we have frequently stated, our own chosen plan has been to sell as soon as the produce was ready for market, and we have been satisfied with this course. As a corroboration of the wisdom of this method, we give the following average prices of wheat per 100 pounds, for the different months during 10 years past in Liverpool; prices here of course being regulated by those there; as follows, January, $2.90; February, $2.80; March, $2.78; April, $2.72; May, $2.77; June, $2.77; July, $2.73; August, $2.81; September, $2.90; October, $2.95; November, $2.95; December, $2.94.

Fertilizers for Wheat.—"J. M. W.," West Philadelphia. The most active fertilizers for wheat at this season are Peruvian guano and nitrate of soda; but it is not advisable to use these now, except in small quantity, as they are very soluble and quickly washed away by the fall rains. 100 lbs. of either are sufficient at this time, and an equal quantity may be used in the spring.

Cure for Ringbone.—"J. L. T.," Thomastown, Ohio. As this affection in the result of several distinct causes, and in each case a different method of treatment is required, it is hardly possible to give any precise directions. Ringbones occur in consequence of constitutional disposition; rheumatic affections; defective nutrition; injuries from concussions, blows, or accidents, and the result from any of these may be inflammation of the membranes covering the bones, leading to deposit of bony matter, or direct abnormal bony growth. Thus the usual remedy, blistering, frequently makes the disease worse. No one can give a reasonable method of cure without knowing the history of the case. It is safest to apply to a veterinary surgeon, or let the horse alone, using cold water bandages until the ringbone is fully formed, when the worse that can happen is a stiff joint.

Calves in a Hog Pasture.—"M. F. P.," Champaign, Co., Ill., states that he had some calves of pure and ⅞ Durham blood, which he allowed to run during the day in a timothy pasture in which 40 head of hogs were kept, and where there was a prairie pond. The calves soon had a cough, and scours, and diarrhœa, passing what seemed to be pure milk, and some of them died. They laid down naturally, with the head stretched out, resting on the lower jaw, and seemed in great pain, breathing short and grunting at each breath. These calves probably were affected with worms in the throat and bowels, which would cause the cough and diarrhœa. The disease is known as "hoose or husk," and was without doubt occasioned by the stagnant water of the pond and the presence of the hogs, from which the eggs of the parasites were obtained. The method of preventing the trouble is simple. Keep the calves where they have pure water and clean grass, and away from hogs. The cure is not easy. Salt and turpentine in small quantities are the only remedies that have been found effective, but it is very difficult to reach these troublesome parasites.

Color of a Berkshire Pig.—"Subscriber," Baltimore, Md. As now bred the Berkshire pig is black, blue-black, or a sort of deep plum color; with all the feet and the center of the face, but no other portion of the body, white. If a few white or sandy hairs appear on one of the shoulders or side it is an objection, but not a disqualification. That is simply a breaking out of the original marking of the old Berkshire from which the present improved race has descended. As a breeder we would, however, not use nor keep any animal for breeding, that showed the least variation from the highest present standard of marking.

Wages of Broom Makers.—"T. S." Clinton, La. The wages of broom makers are from $3 weekly to boys and girls up to $12 weekly for experienced workmen. In country places it would be a very easy matter for a family to make several dozen brooms with such machinery as a handy man could construct for himself, during the leisure hours of winter, and dispose of them to the stores. The handles can be made at any turning shop out of soft maple, white birch, or willow. The timber must be sawn into plank and thoroughly seasoned, being piled so as to dry perfectly straight.

Additional Fairs.—*Pennsylvania*, Bucks Co., Doylestown, Oct. 3-6; Washington Co., Burgettstown, Oct. 3-5.—*Maryland*, Carroll Co., Westminster, Oct. 2-8; Md. Jockey Club, Pimlico, Oct. 24-27.—*Ohio*, Central Ohio, New Cornerstown, Oct. 10-13; Portage Co., Randolph, Oct. 6-7. For others, see last month's paper.

"Science Applied to Farming," Correspondence.

German Potash Fertilizers.—"F. K.," of Conn., asks about the chemical composition of potash salts. The basis of potash compounds is the element *Potassium*. This combined with oxygen forms potassium oxide, or potassa, or, in familiar language, potash. The same term, potash, is also applied to two other potassium compounds. One, which may be considered as a compound made up of potassa and water, is known in the chemical laboratory as potassium hydrate, and in common language as caustic potash. The other is a compound of potassa with carbonic acid, and is commonly called carbonate of potash. The ordinary potashes and pearlashes prepared from the lye of wood ashes are more or less impure carbonate of potash. Potassium combined with chlorine forms potassium chloride, commonly called chloride of potassium or "muriate of potash." Potassa united with sulphuric acid forms potassium sulphate, or sulphate of potash. By adding to ordinary potash lye from ashes a proper amount of sulphuric acid, and boiling the liquid down, we might, with proper care, obtain a solid substance, which would be a sulphate of potash. If we were to use hydro-chloric (muriatic) acid instead of sulphuric, we should obtain a chloride of potassium or muriate of potash. Other elements as well as potassium combine with sulphuric acid and chlorine to form sulphates and chlorides. Sodium chloride is common salt. Sulphate of soda (Sodium sulphate) is known as Glauber's salt, and sulphate of magnesia as Epsom-salts. The German potash salts consist of potassium chloride and sulphate, mingled with more or less of the just named compounds.

Sulphates and Muriates of Potash.—"F. E.," of Conn.: It is customary to reckon the potassium of these salts as "actual potash." In the sulphates this term expresses the amount of potassium oxide, potassa, or potash present. In the muriates it represents the amount of potash which the potassium would make if it were combined with oxygen instead of chlorine.—100 lbs. of pure sulphate of potash contains about 54 lbs. of "actual potash." 100 lbs. of sulphate of potash are therefore said to be equivalent to 54 lbs. of actual potash, and vice versa, 54 lbs. of potash in the sulphates are reckoned as equivalent to 100 lbs. of sulphate of potash. In the "muriates" 100 lbs. of chloride of potassium are equivalent to about 63 lbs. of potash and vice versa.

Grades of Potash Salts and Prices.—"J. R. F.," Maine: In the *American Agriculturist* Market reports, under the head of "Prices of Fertilizers," will be found a quotation, "Chloride of Potassium (muriate of potash), 80 p. c." Where chlorides are to be used, this brand is decidedly to be recommended. It is, so far as I have seen, almost always of good quality. It contains generally from 80 to 85 per cent. of chloride of potassium, the residue being mostly common salt. At 80 per cent., 100 lbs. would contain 80 lbs. of potassium chloride, which would correspond to about 50 lbs. of actual potash (80×63, see above.) At $3 per 100 lbs for the muriate, the actual potash would cost 6 cents per pound ($3÷50.) Of the sulphates, the higher grades contain from 55 to 80, and in some brands over 90 per cent. of sulphate of potash, the residue being mostly sulphate of soda and sulphate of magnesia. I have noticed the 80 per cent. sulphate offered in New York at 3¾ cents per lb. in small lots, and at $60 per ton in lots of one ton or more. 100 lbs. of this would contain 80 lbs. of sulphate of potash, corresponding to about 43 lbs. of actual potash (80×54). At $3 25 per 100 lbs. the actual potash would cost about 7½ cents per lb. It is an unfortunate fact that the sulphates of potash not unfrequently fall below the standard on which they are sold, both as regards the total amount of potash and the amount of sulphate—more or less being in the form of chloride. Several cases of this sort have been brought to the attention of our Experiment Station. In each the American importer had been deceived by the representations of the agents or chemists on the other side of the Atlantic.

Lower Grade Potash Salts.—In the price list referred to are mentioned "German Potash Salts, 25—35 per cent. This is a very indefinite expression. There are brands advertised by the Stassfurt manufacturers of about these grades in which the 25—35 per cent. refers to sulphate of potash, in which form the potassium is claimed to occur. The residue is mostly common salt, with more or less magnesium chloride and sulphate. Some of the articles of these grades are simply calcined kainit, that is to say, kainit which has been subjected to a high heat. By this process the water is expelled, and part of the chloride of magnesium decomposed, the objectionable chlorine being to some extent driven off I think it is very questionable whether any potash salts below the grade of 30—33 per cent. sulphate (16—18 per cent. potash) will be economical as potash fertilizers on this side of the Atlantic.

Kainit.—"J. C. W.," Maryland: The mineral "kainit," which occurs abundantly in the contiguous mines of Stassfurt and Leopoldshall, is a compound of sulphates of potash and magnesia, chloride of magnesium and water. As mined and sold it is contaminated with more or less common salt. Circulars from the manufacturers at the Stassfurt mines put the unmanipulated kainit at from 17 to 25 per cent. sulphate of potash. Considerable quantities of kainit are sold in this country under the name of "Genuine Leopoldshall Kainit." The average composition of the kainit as sold from the Leopoldshall mines is stated by good German authority at 25 per cent. sulphate of potash, 14 per cent. sulphate of magnesia, 14 per cent. chloride of magnesium, 32 per cent. chloride of sodium, and 13 per cent. water. A sample of Leopoldshall kainit sold to farmers in this State at $30 per ton, showed just about this composition on analysis at our laboratory. At the price mentioned, the potash (13.8 per cent.—278 lbs. to the ton) came to about 11 cents per pound. Another sample of the same brand contained a smaller percentage of potash. A specimen of "kainit" analyzed by Prof. Storer gave 10¼ per cent. of actual potash. At $40 per ton, the price at which it was sold in Boston, "each pound of real potash would come to rather more than 18 cents, to say nothing of the cost of handling the 1,600 lbs. of useless matter in each ton of the fertilizer, or of the risk that some of the extraneous matters (sodium and magnesium salts) might actually injure the crops to which they were applied."

Analyses of potash salts by Prof. Johnson, chemist of the Connecticut Board of Agriculture, and by Prof. Goessmann, State Inspector of Fertilizers for Massachusetts, agree entirely with Prof. Storer's and ours, in showing that a large amount of the German potash salts imported into this country are of the poorer grades. This is a "curious evil which needs to be known—and to be corrected." As long as farmers will buy low-priced potash salts and other fertilizers because they are "cheap," and pay no regard to the actual quality, they must expect to get poor wares at dear rates, and have poor success in using them.

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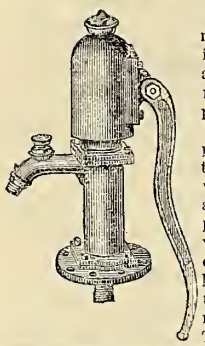

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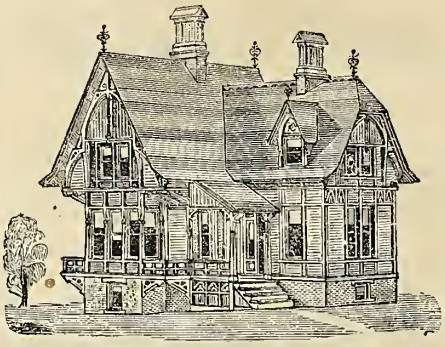

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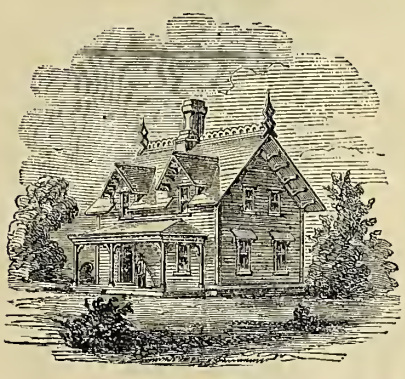

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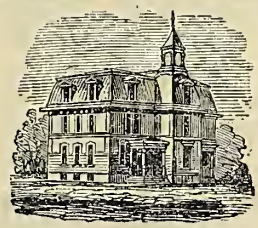

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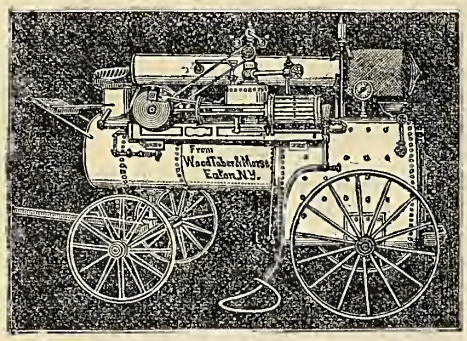

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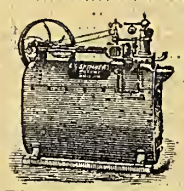

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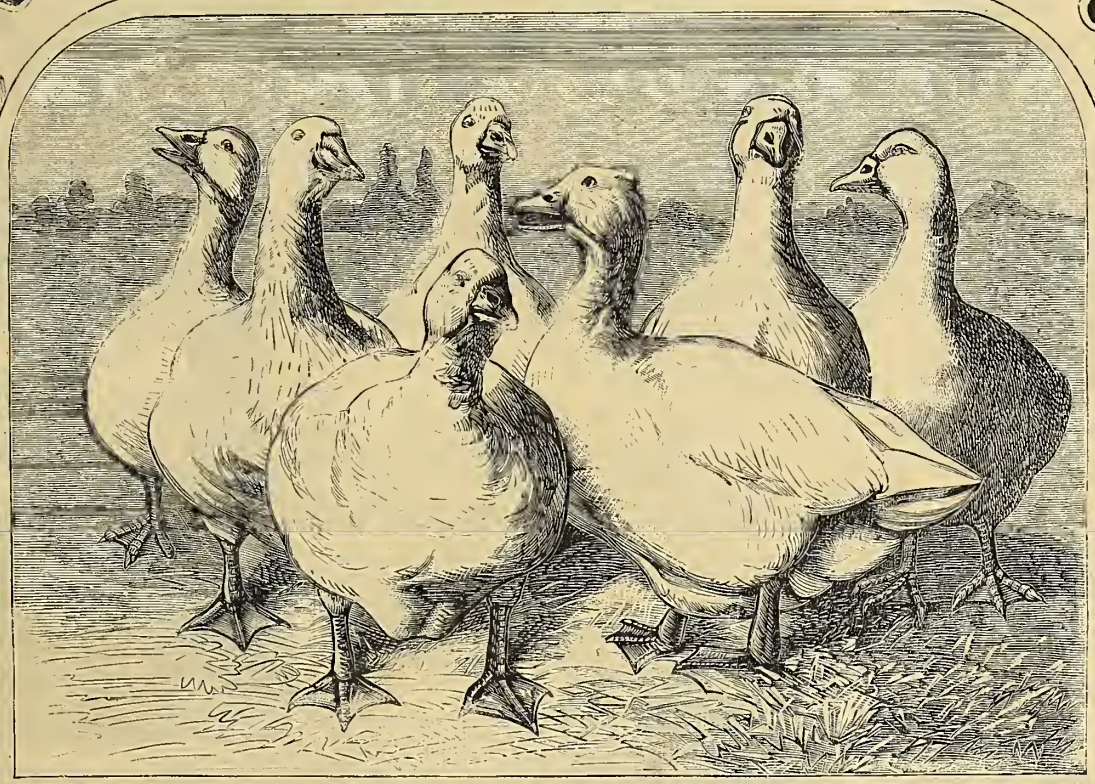

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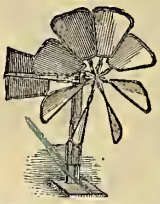

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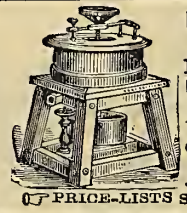

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Basset's American Plum.—This comparatively new variety originated with Mr. W. F. Basset, Hammonton, N. J. Messrs. A. Hance & Son, Red Bank, N. J., who send us specimens, speak of its bearing qualities as "perfectly wonderful." The toughness of the skin makes it less desirable as a dessert fruit, but when cooked, we can testify to its great excellence.

Calendar for November.

Day of Month.	Day of Week.	Boston, New England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. York City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	W	6 33	4 53	rises	6 30	4 57	rises	6 27	5 0	rises
2	T	6 34	4 52	5 2	6 31	4 56	5 8	6 28	4 59	5 13
3	F	6 35	4 51	5 44	6 32	4 55	5 50	6 29	4 58	5 57
4	S	6 36	4 50	6 37	6 33	4 54	6 45	6 30	4 57	6 53
5	S	6 38	4 49	7 45	6 34	4 53	7 52	6 31	4 56	8 0
6	M	6 39	4 47	9 2	6 35	4 51	9 8	6 32	4 55	9 15
7	T	6 40	4 46	10 19	6 36	4 50	10 24	6 33	4 54	10 29
8	W	6 42	4 45	11 13	6 38	4 49	11 36	6 35	4 53	11 40
9	T	6 43	4 44	morn	6 39	4 48	morn	6 36	4 52	morn
10	F	6 44	4 43	0 46	6 40	4 47	0 48	6 37	4 51	0 50
11	S	6 46	4 42	1 56	6 42	4 46	1 57	6 39	4 50	1 57
12	S	6 47	4 41	3 4	6 43	4 45	3 4	6 40	4 49	3 3
13	M	6 48	4 40	4 12	6 44	4 44	4 12	6 41	4 48	4 9
14	T	6 50	4 39	5 23	6 46	4 43	5 19	6 42	4 47	5 16
15	W	6 51	4 38	sets	6 47	4 42	sets	6 43	4 46	sets.
16	T	6 52	4 37	4 39	6 48	4 41	4 48	6 44	4 45	4 52
17	F	6 53	4 36	5 21	6 49	4 40	5 28	6 45	4 44	5 35
18	S	6 54	4 35	6 10	6 50	4 40	6 19	6 46	4 44	6 27
19	S	6 55	4 34	7 9	6 51	4 39	7 16	6 47	4 43	7 23
20	M	6 57	4 34	8 14	6 52	4 38	8 20	6 48	4 42	8 26
21	T	6 58	4 33	9 19	6 53	4 38	9 21	6 49	4 42	9 29
22	W	6 59	4 32	10 22	6 54	4 37	10 26	6 50	4 41	10 29
23	T	7 0	4 31	11 25	6 55	4 36	11 27	6 51	4 41	11 30
24	F	7 2	4 31	morn	6 57	4 36	morn	6 52	4 41	morn
25	S	7 3	4 30	0 28	6 58	4 35	0 30	6 53	4 40	0 31
26	S	7 4	4 30	1 32	6 59	4 35	1 32	6 54	4 40	1 32
27	M	7 5	4 29	2 37	7 0	4 35	2 35	6 55	4 40	2 34
28	T	7 6	4 29	3 45	7 1	4 35	3 43	6 56	4 40	3 40
29	W	7 8	4 29	4 58	7 3	4 35	4 54	6 58	4 40	4 49
30	T	7 9	4 28	6 15	7 4	4 34	6 9	6 59	4 39	6 4

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
Full M'n	1	6 47 ev.	6 35 ev.	6 23 ev.	6 11 ev.	5 41 ev.
3d Quart.	8	0 33 ev.	0 21 ev.	0 9 ev.	11 57 mo.	11 27 mo.
New M'n	15	8 4 ev.	7 52 ev.	7 40 ev.	7 28 ev.	6 58 ev.
1st Quart	23	11 42 ev.	11 30 ev.	11 18 ev.	11 6 ev.	10 36 ev.

AMERICAN AGRICULTURIST.

NEW YORK, NOVEMBER, 1876.

The last month of autumn has arrived; at least it is so according to the almanac, but in most northern localities winter has practically commenced. The work of the year has closed, so far as the gathering in of its results is concerned, and the farmer who keeps accounts, can easily figure up how he stands with the world. There are people who say, and perhaps think, that farmers are never satisfied, and are for ever grumbling. Unfortunately scarcely a year passes but some farmers have reason to grumble, for what with drouth in some places, floods in others, and insect pests everywhere, we farmers do have a hard time of it. But on the whole, leaving out the inevitable isolated cases of loss and distress, farmers are not grumbling this year, for a bountiful harvest, and fair prices—for the times—have placed them in a better condition than the majority of their fellow citizens. Everywhere signs of recovery are beginning to dawn upon the country, and hope is already taking the place of gloom in business circles. If the fair prospect continues, "dull November" will be more agreeable than usual, and we can think over our plans for next year with cheerfulness.

Hints about Work.

Corn-Husking properly comes first, in fact, it really belongs to the previous month; but there are always laggards, and the corn is not all husked yet. This delay is costly, and no time should be lost in getting the corn into the crib, and the fodder stacked or into the barn.

What to do with the Corn-Stubble.—Fields that have been cleared in time, should be plowed in readiness for early sowing of oats in spring. If roots are to follow the corn, the stubble may be plowed at once and sown with rye. Three or four bushels should be sown to the acre. This rye will furnish a heavy crop of green fodder next May, or an excellent early pasture in the spring, or may be plowed under as a green manuring. In either case the expense of the seed, which is the only outlay, will be many times repaid in the increase of the following crop.

Oats after Corn.—There is no question of the desirability of avoiding this rotation *if possible*, when wheat follows the oats. In most cases it is better to take a root crop after corn, and then oats may follow the roots, and clover be sown down with the oats. With very favorable experience in seeding down with oats, we never hesitate to do it, and wheat may follow the clover. A longer rotation is made necessary, and this is advantageous. If this change is made, it necessitates a change in the fall work, and thorough plowing of the corn-stubble. Here is a point well worth close study.

Storms may now be looked for, and everything should be put under cover that needs protection, and the cover be made weather-proof. Stacks should be completed and thatched; sheds be tightened, the windows made good, and board roofs well nailed down to prevent leaking. Yards should be drained, and all the litter gathered in where it will be kept dry. Every arrangement for economy in the use of material, and for the comfort of live stock of all kinds, should be made *now*, when it will cost less in time and labor than if done later.

Potatoes that are already dug, should be secured in pits or cellars at once, before sharp frosts occur. If pitted, do not neglect to amply ventilate the pits. A one-inch drain tile, placed chimney-like in the top of the pit for every six feet in length, will be sufficient; instead of the tiles, wisps of straight wheat straw, four or five inches thick, may be used. Any potatoes still in the ground should be dug, and secured without delay. What are intended for sale are best sold from the field; it rarely ever pays to store potatoes for sale until spring. It is well to remember that potatoes, when boiled, are worth at least 25 cts. a bushel for feed.

Root Crops.—Mangels and sugar beets should be harvested without delay. Later and hardier roots may be left to mature as long as growing weather holds out, but not so late as to be injured by heavy frosts. Parsnips may be left in the ground all winter, and will be improved in quality.

Cows.—As soon as cows are put on dry feed, the milk falls of, but if they are well fed, what is lost in quantity is gained in quality. A cow that is milking should have at least two quarts of mixed corn-meal and bran daily, with as much chaffed hay as she will eat. A cow will usually eat two bushels of the chaff in a day. Some roots in addition would be useful. Dry cows should have one quart daily; it will not hurt a cow to take on a little fat at this season, nor make her milk any less when she comes in.

Calves and Yearlings should be kept growing. A check at this season can not be made up through the winter.

Sheep.—No stock requires more careful attention than sheep. If not well fed they suffer, and if too well fed they become dainty and lose appetite. Perfect regularity should be observed in feeding, and then they will not neglect coarse food while waiting for their grain. A system should be adopted and adhered to rigidly. Half-a-pint of grain, daily, is sufficient at present; it is easier to increase the feed than to diminish it. Ample room, and open, airy sheds should be provided. Crowding and heating will cause shedding of the wool. A daily run in a dry field will be healthful. Unless lambs are wanted for the butcher, ewes should not be coupled until late this month. Whenever practicable, the lambs should come with the young grass.

Pigs.—Fattening pigs should be pushed as fast as possible. Pork can not be made cheaply unless the pigs are kept dry, clean, and comfortable. It is a mistake to suppose that the laws of health which relate to domestic animals, are different from those which relate to mankind. There is now much disease amongst hogs, and it will continue so long as they are not cared for on the same sanitary principles as their owners are. When the laws of health are observed there is no disease. Breeders should not neglect to secure a thoroughbred boar, at least 9 months old, if for use this season.

Store Pigs should have clean, dry pens, and be fed upon mixed food. The causes of most of the diseases affecting swine, are *corn, corn, corn*, continually; and filth uninterruptedly. Corn is an imperfect food, containing too much carbo-hydrates, and not enough nitrogen and phosphates. Along with wheat or rye bran, roots, milk, and occasionally some chaffed and moistened clover hay, corn is

well enough; but a mixed diet, a dry, clean bed, an abundance of clean water, and good ventilation, are necessary if one would have healthy pigs.

Horses.—Pasture has lost its value now, and the nights are too cold for horses to be kept out of the stable. Colts should have a pint of oats daily, and be halter broken. Their education should be begun now, and the first thing to be done is to accustom them to handling, brushing, and restraint. Patience and kindness with the colt will go far to form a good disposition in the future horse.

Rubbish.—Myriads of insects and spores of mold and injurious fungi gather in the rubbish of the farm. Burn everything of this kind. Potato tops harbor the spores of the potato disease; straw, corn-fodder and stubs, harbor chinch bugs; chips, bark, weeds, and all such waste, furnish hiding places for grubs, beetles, etc. As preventive measures none are more effective than general neatness and cleanliness everywhere about the farm.

Sundry Matters.—A safe lantern should be procured for the stable and barn. If kerosene oil is used, only those kinds that are known to be safe should be purchased. The small extra cost is nothing as compared with safety from accident. No farmer can afford to go uninsured. Choose a well known, safe company in which to insure. Painting can be done better and cheaper now than at any other time; there are no dust nor flies to spoil the paint. Leaves should be gathered for bedding; there is nothing safer in the brood sow's pen. Stones and stumps may be cleared off, cellars banked up, cleaned, and whitewashed, and every tool and implement cleaned and stowed away.

Work in the Horticultural Departments.

In most northern localities the first hard freezing weather comes during November, and should not find the out-door work in arrears. Plowing can be done at any time when the ground is not frozen. Cellars in which roots and other garden crops are stored, as well as those in which living plants are kept, should only be closed during cold nights. Proper ventilation should be provided. Paint the out buildings, and if the wood-work of the garden implements is not preserved by the application of petroleum, give a coat of paint. Land plowed or or forked up in the fall and left exposed during the winter will become fine and mellow.

Orchard and Nursery.

Many of the suggestions given last month will now be in season, especially those in regard to planting and heeling-in trees.

Apples that were stored in bins just as they were picked from the trees should be sorted, put into barrels and stored in a cool place where the frost will not reach them. It will be most profitable in some places, if one has the conveniences, to make the apples into vinegar. Cider made from the late apples at this season is the best for family use, as fermentation goes on more gradually.

Fruit Cellars need careful oversight; for the late sorts to come to proper perfection, and to keep well, they must be in a temperature as low as may be without freezing; it must not be forgotten that fruit in ripening gives off heat, and this must be regulated by the admission of cold air from without. In ripening, a considerable amount of carbonic acid is given off, which would be of use in retarding the ripening, but very dangerous if allowed to accumulate in the cellar of a dwelling, hence ventilation by means of a chimney, or in some other manner, is a matter that must be attented to.

Root Grafting is done in-doors in winter, and preparations are made by taking up the stocks and heeling them in where they may be got out at any time; they may be out doors, well covered to prevent the ground from freezing or buried in the cellar; they may also be stored in boxes of earth.

Cions may be cut whenever vegetation is at rest, and better before severe weather. Label the sorts carefully. Saw-dust, as it comes from the mill, is the best material to keep them in; sand or light soil will preserve them well, but the cions are less pleasant to work on account of the grit.

Manuring.—It is commonly the case that the orchard is cropped year after year until the diminished yield shows that something must be done. The proper way is to give a moderate manuring annually; stable manure put on in the fall and plowed in, or in small orchards forked in, may be alternated with ashes or lime on other years. Clover to be pastured by hogs, and afterwards plowed under, is one of the best fertilizers.

Labels should be looked to and renewed where necessary. Stake labels to nursery rows must be driven in firmly to prevent throwing out. Tie labels may be fastened with copper wire or what is known as "lace" leather. Red cedar makes durable labels and should be painted with white lead, and the name written with a moderately hard black lead pencil. Do not rely solely upon labels, but prepare a plan of the orchard by which the name of each tree may be learned from its position.

Nursery Rows.—Turn a light furrow up on each side of the rows to keep the water from standing around the stems, and freezing.

Seedlings.—Apple and pear stock are usually taken up at the end of the first year, assorted, tied in bundles and heeled-in until spring. Most ornamental trees do better to remain two years in the seed bed, but must be protected from heaving out by frost. A coating of leaves or of evergreen boughs will prevent this. See that no water will stand among the plants.

Fruit Garden.

Planting should be done early this month of all hardy fruits. If the soil is not in good condition heel in the plants in a sheltered place.

Blackberries and Raspberries.—If the old fruiting canes have not been cut out and burned as directed last month, do it now. While the ground remains open, it is better to set out plants as they start early in the spring, as the shoots are apt to be broken off if moved then.

Strawberries.—Cover the soil of the beds with straw or leaves, just before the ground freezes hard; let the covering over the plants themselves be slight, or they may be injured.

Grape Vines.—Beginners make a great mistake in setting out old vines. We see offered in the city markets stems an inch or more in diameter without as much root as a good year old vine should have. Young vines, one or two years old, with abundant fibrous roots are preferable to older ones. Cut back the stem to a foot, plant in good, not over-rich soil, spreading the roots well, and then cover the surface with litter. It is not practicable to give directions for pruning fruiting vines, as all depends upon previous treatment and present condition. It must be borne in mind that the bearing shoots come from the buds now visible, and one must leave buds where shoots are wanted. Most varieties may be propagated from cuttings made from canes of last season's growth. Cut the canes removed in pruning into lengths of two or three buds, tie into bundles, label, and put away in earth in a cool cellar.

Trellises are repaired, or new ones made, more conveniently now than in spring. Use the most durable wood. Chestnut is durable in some soils, red cedar lasts well; locust is the most durable, and where this is scarce, pieces three feet long may be set two and a half feet in the ground and uprights of pine or other lumber spiked to them.

Currants and Gooseberries.—The bushes when crowded should have the old branches thinned out, and the new growth shortened one half or one third. The prunings of new wood may be made into cuttings 6 inches long and set out at once.

Kitchen Garden.

Plow or fork up as much of the garden before the ground freezes, as possible, leaving it without harrowing. Gather up all rubbish, and weeds, and burn so that the whole ground will be ready for the plow at any time.

Manure.—This and the following month must be devoted to increasing the stock of manure. Provide absorbents for the stable and privy; dry earth is best; if this has not been collected, use leaves, woods earth, dry muck, or even coarse marsh hay run through a cutting machine. Let the manure from the hen house be gathered and put in a dry place at least once a month, sprinkle dry earth under the roosts weekly.

Winter Protection is necessary in most northern localities, especially for spinach and sprouts. Do not apply until freezing weather, the object being to prevent sudden changes from heat to cold.

Cabbages.—Before the ground freezes hard, open a furrow in a dry spot, put down two rails 5 or 6 inches apart, and then lay the cabbages, head downwards, upon them; turn the soil upon them from each side so as to cover the heads with 3 or 4 inches of earth. If a part are covered with hay or straw they can be got at readily during mild spells in the winter. Plants raised from seeds sown in September can now be set out in cold frames to be kept until spring; set down to the first leaves and do not put on the glass until very cold weather, the object being to keep the plants dormant. Those with soft or poor heads, if set out in trenches and covered with boards, will make excellent heads by spring.

Roots.—Market gardeners store their root crops, (except potatoes), in trenches or pits in a dry place from which water will drain off. The trench is opened 4 feet deep and 6 feet wide; the roots are stacked in sections across the pit, 2 feet wide, then 6 inches of earth, then 2 feet of roots, 6 inches of earth, and so on, covering all with 18 inches or 2 feet of soil rounded up to shed water. By covering the earth well with litter, the roots may be taken out at any time. If stored in a root cellar they should be packed in earth to preserve their freshness. If the quantity is small, boxes or barrels may be used, but if large, bins may be made.

Celery may be stored in trenches in the open ground; make them a foot wide, and as deep as the length of the celery; pack the plants closely, before severe weather comes. Cover with a few inches of hay or straw and boards to keep out water; when very cold weather comes, more straw should be added. Small lots may be stored in long narrow boxes, with a few inches of soil on the bottom, and kept in a cool cellar.

Lettuce.—Set out in cold frame for early, and cover that in the open ground with straw or hay.

Rhubarb.—Make a new bed in the fall, if needed, it starts very early in the spring. Take up a few roots for forcing; a cask partly filled with horse manure placed in a warm cellar will answer.

Sweet Potatoes.—As soon as frost has touched the vines, cut off close to the ground. Dig on a warm, sunny day, and allow them to dry for a few hours, when they should be packed in boxes or barrels with perfectly dry chopped straw, and placed where the temperature will not sink below 55° or 60°.

Parsnips.—Dig before the ground freezes, and store as recommended above; a part may be left in the ground until spring.

Carrots and Beets should be gathered before very cold weather, and stored the same as parsnips. Some cut the tops with a sharp hoe before lifting.

Turnips will stand hard frosts and may remain in the ground until freezing cold weather comes. Feed the tops to the cows.

Flower Garden and Lawn.

Lawns.—Sow seed upon thin spots. Do not mow too late, else there will not be enough grass to protect the roots.

Leaves.—As a matter of neatness it is necessary to gather these from the paths, and it is well to collect from the road-sides and elsewhere all that are at hand. They make the best protection for tender plants, and after using as an absorbent in the stable, a valuable addition to the manure heap.

Edgings.—Cut and trim neatly all the grass margins bordering the paths and drives, before freezing weather, and protect places where careless drivers are likely to encroach, by driving down stakes.

Bulbs.—The earlier in the month these are planted the better start they will get before frost. If there are any tender bulbs yet in the ground, take up and store in a cool, dry place.

Tender Plants.—The time for taking up these depends upon the locality. If any are still out, they must be cared for. When such plants are placed in a pit or cellar they should be shut up only when necessary to protect them.

Hardy Plants.—Divide and reset those needing it, if the ground remains open, as many will do better than if treated in spring.

Greenhouse and Window Plants.

Whatever repairs are yet needed must be completed at once, as a sudden "cold snap" is likely to occur at any time.

Ventilation must be watched as soon as heat is given; during cold, windy days open the ventilators on the side opposite to which the wind blows.

Fumigation once or twice a week is necessary to keep the plants in good health. House plants may be smoked by placing them under a box or barrel.

Hanging Baskets if not watered frequently soon dry out; shower often and water thoroughly two or three times a week.

Climbers need to be kept tied up neatly to the rafters to look well. A few Passion flowers and other climbers are useful to furnish shade for ferns and other plants.

Camellias and Azaleas should have a cool place, where their flower buds will develope gradually. Shower the leaves occasionally, and if Camellias are wanted for the holidays, bring into heat at once.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Oct. 12th, 1876, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats*
26 d's *this* m'th	327,000	2,211,000	3,714,100	185,000	384,000	1,503,000
25 d's *last* m'th	291,000	1,617,000	4,117,000	221,000	81,000	693,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	359,000	2,189,000	3,821,000	167,000	178,000	1,419,000
25 d's *last* m'th	431,000	2,302,000	3,349,000	253,000	16,500	1,214,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1876	327,000	2,211,000	3,714,000	185,000	384,000	1,503,000
25 days 1875	347,000	3,976,000	3,771,000	19,700	329,000	1,411,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1876	359,000	2,189,000	3,821,000	167,000	178,000	1,419,000
25 days 1875	422,000	5,013,000	4,086,000	17,000	215,000	1,786,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Oct. 9, 1876	1,931,892	1,195,387	158,305	91,245	825,187	421,751
Sept. 11, 1876	2,532,911	935,136	60,281	52,891	889,136	445,316
Aug. 7, 1876	2,831,299	901,557	91,960	53,914	1,232,895	434,208
May 8, 1876	1,563,826	172,090	16,365	33,301	437,387	450,613
Apr. 10, 1876	3,293,074	232,140	68,429	209,381	706,282	436,942
Jan. 10, 1876	5,802,293	663,982	100,741	325,191	1,080,300	307,433
Dec. 7, 1875	5,818,036	816,962	99,908	305,951	1,252,005	258,364
May 11, 1875	969,804	1,542,924	16,124	16,537	545,209	229,655

4. *Exports from New York, Jan. 1, to Oct. 12.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1876	1,517,090	20,121,369	14,245,477	806,474	29,392	460,481	470,830
1875	1,442,211	20,631,499	10,760,680	154,510	225	101,323	240,832

Gold has been up to 110⅞, and down to 108⅞, closing Oct. 12, at 109, as against 110 on Sept. 12, and 111⅞ on July 12, 1876, and 116½ on the 12th of Oct., 1875.... The movements in Breadstuffs have been moderate for the season, and prices of Flour and Grain have fluctuated considerably, influenced, in good part, by the tenor of the foreign market and weather reports, the war news, and rumors from Europe, the course of ocean freights, and of Gold and Foreign Exchange. The export dealings have been on a somewhat restricted scale. Flour, Wheat, and Rye closed weak in price; Corn firmer; Barley and Oats lower. Further purchases of Canada Peas, in bond, have been made for shipment to England; the most important having been of 9,200 bushels, @ 93c. a bushel, taken for the London market, freight by steam @7¾d. per bushel, in bags. Buckwheat has been very quiet thus far. Buckwheat Flour has been meeting with a readier sale, as the weather has been growing much cooler.... Cotton has been depressed and irregular in price, on a comparatively tame business for prompt and forward delivery.... Wool, of domestic product, has been in very good demand, mainly for manufacturing purposes, though, in part on speculative account, at advanced prices, closing strong and buoyant. Foreign Wool dull, but held more firmly. ... Tobacco has been less active and lower. The export movement has fallen off considerably.... Provisions have been in fair demand; Pork, Lard, Bacon, and Cut Meats closed weak; Beef steady; Beef Hams much lower; Butter, Cheese, and Eggs in favor of buyers..... Petroleum has been very quiet; but prices have been remarkably well supported..... Naval Stores closed dull and drooping.... Hops have been more urgently sought after, largely for shipment to England and Germany, at advanced rates. ...Hay has been moderately inquired for at somewhat lower figures..... Seeds have been attracting more attention. Timothy Seed has been particularly brisk, chiefly for export, in great part to Hamburgh, at higher prices..... Ocean grain freights have been fairly active, but unsettled, leaving off weak on the berth, but firm in the chartering line.... Grain rates by steam to Liverpool, closed on the 12th Oct. at 8@8¼*d*; to Glasgow at 8¼@8½*d*; to London at 7¼@7¾*d*; to Liverpool, by sail, at 7½*d*; London, by sail, at 7@7½*d*. per bushel. Provisions by steam to Liverpool, 35*s*.@50*s*. per ton; Cotton at 5/16@⅜*d*. ℔ lb. Grain tonnage for Cork and orders, at 6*s*.@6*s*4½*d*.. per quarter. Grain rates from San Francisco to Liverpool, quoted at 60@62*s*6*d*. Timothy Seed for Hamburgh, by steam, 47*s*.6*d*.@52*s*.6*d*. per ton.

CURRENT WHOLESALE PRICES.

	Sept. 12.	Oct. 12.
PRICE OF GOLD	110	109
FLOUR—Super to Extra State	$3 85 @ 5 35	$4 35 @ 5 60
Super to Extra Southern	3 85 @ 8 50	4 35 @ 8 50
Extra Western	4 60 @ 9 75	5 10 @ 9 75
Extra Genesee	5 35 @ 6 75	5 60 @ 6 85
Superfine Western	3 85 @ 4 50	4 35 @ 5 00
RYE FLOUR	2 00 @ 5 15	2 20 @ 5 20
CORN-MEAL	2 60 @ 3 30	2 65 @ 3 30
BUCKWHEAT FLOUR, ℔ 100 lbs	— @ —	3 25 @ 4 00
WHEAT—All kinds of White	1 18 @ 1 33	1 20 @ 1 34
All kinds of Red and Amber	90 @ 1 28	1 00 @ 1 28
CORN—Yellow	56 @ 58	57½ @ 60
Mixed	50 @ 57½	50 @ 58
White	54 @ 58	57½ @ 60
OATS—Western	37 @ 48	28 @ 48
State	42 @ 50	43 @ 48
RYE	68 @ 90	70 @ 90
BARLEY	85 @ 1 10	85 @ 1 18
BUCKWHEAT	— @ —	80 @ 90
BARLEY MALT	— @ —	80 @ 1 30
HAY—Bale, ℔ 100 lbs	60 @ 1 00	55 @ 90
STRAW, ℔ 100 lbs	50 @ 95	50 @ 95
COTTON—Middlings, ℔ lb	11⅝@ 11¾	10⅞@ 11⅛
HOPS—Crop of 1876, ℔ lb	20 @ 30	27 @ 40
" old, ℔ lb	4 @ 20	4 @ 22
FEATHERS—Live Geese, ℔ lb	30 @ 60	35 @ 57½
SEED—Clover, ℔ lb	10 @ 11	13½@ 14
Timothy, ℔ bushel	1 70 @ 2 00	2 00 @ 2 10
Flax, ℔ bushel	1 43 @ 1 44	1 44 @ —
SUGAR—Refin'g & Grocery ℔ lb	8 @ 10¼	8 @ 9⅞
MOLASSES, Cuba, ℔ gal. 50 test	30 @ 40	32 @ 33
New Orleans, new crop, ℔ gal	45 @ 60	40 @ 62
COFFEE—Rio (Gold)	15½@ 18¾	16 @ 19¼
TOBACCO, Kentucky, &c., ℔ lb	5 @ 25	6 @ 19
Seed Leaf, ℔ lb	5 @ 55	3 @ 50
WOOL—Domestic Fleece, ℔ lb	20 @ 45	28 @ 50
Domestic, pulled, ℔ lb	17 @ 58	22 @ 42
California, spring clip	12 @ 30	13 @ 30
California fall clip	— @ —	10 @ 21
TALLOW, ℔ lb	8¾@ 8⅝	8¾@ 8⅝
OIL-CAKE—℔ ton	38 50 @ —	38 00 @39 50
PORK—Mess, ℔ barrel	17 50 @17 75	17 00 @17 25
Prime, ℔ barrel	15 50 @16 75	— @ —
BEEF—Plain mess	8 00 @10 00	8 00 @10 00
LARD, in trcs. & bbls, ℔ 100 lb	11 15 @11 25	10 11½@10 75
BUTTER—State, ℔ lb	18 @ 33	22 @ 38
Western, poor to fancy, ℔ lb	16 @ 30	16 @ 35
CHEESE	5 @ 12	5 @ 13½
BEANS—℔ bushel	75 @ 2 00	1 00 @ 2 10
PEAS—Canada, in bond, ℔ bu	95 @ 98	93 @ —
EGGS—Fresh, ℔ dozen	20 @ 26	22 @ 26
POULTRY—Fowls	14 @ 19	12 @ 20
Turkeys—℔ lb	15 @ 20	13 @ 20
Geese, ℔ pair	1 25 @ 2 50	1 37 @ 2 25
Ducks, ℔ pair	60 @ 1 00	50 @ 1 00
Roosters, ℔ lb	8 @ 10	8 @ 10
Chickens, dry pick'd lb	15 @ 22	12 @ 20
GROUSE, ℔ pair	80 @ 95	1 00 @ —
SNIPE, per doz	1 25 @ 1 50	— @ —
PARTRIDGE, ℔ doz	85 @ 1 00	70 @ 85
PLOVER, ℔ doz	1 37½@ 1 75	— @ —
DUCKS, Wild, ℔ pair	25 @ 65	30 @ 80
WOODCOCK, ℔ pair	80 @ 90	75 @ 85
PIGEONS, wild, ℔ dozen	— @ —	— @ —
" tame, ℔ dozen	1 25 @ 1 75	— @ —
VENISON, ℔ lb	— @ —	12 @ 20
RABBITS, ℔ pair	— @ —	30 @ 40
HARES, ℔ pair	— @ —	50 @ 65
CUCUMBERS, ℔ bbl	50 @ 1 00	— @ —
TURNIPS ℔ bbl	1 00 @ 2 50	1 00 @ —
CABBAGES—℔ 100	3 00 @ 8 00	3 00 @ 7 00
ONIONS—℔ bbl	1 25 @ 2 50	2 00 @ 2 75
POTATOES—℔ bbl	1 50 @ 2 75	2 00 @ 2 75
SWEET POTATOES—℔ bbl	2 75 @ 3 75	1 75 @ 2 50
RADISHES, ℔ 100 bunches	50 @ 1 00	— @ —
LIMA BEANS, ℔ brg	75 @ 1 75	— @ —
STRING BEANS, ℔ bag	50 @ 1 00	— @ —
CAULIFLOWER, ℔ doz	75 @ 5 00	50 @ 3 00
BROOM-CORN	3 @ 9	3 @ 8
WATERMELONS, ℔ 100	5 00 @20 00	— @ —
OKRA, ℔ 100	— @ —	40 @ 50
PUMPKINS, ℔ 100	— @ —	6 00 @ 9 00
GREEN PEAS, ℔ bush	1 00 @ 1 15	— @ —
TOMATOES, ℔ bskt	50 @ 1 00	50 @ 75
BEETS, ℔ 100 bunches	2 00 @ 3 00	— @ —
EGG PLANTS, lb doz	75 @ 1 25	62½@ 1 00
GREEN CORN, ℔ 100	75 @ 1 25	1 00 @ 1 25
NUTMEG MELONS, ℔ bbl	2 00 @ 3 50	— @ —
CRANBERRIES—℔ bbl	— @ —	8 00 @10 25
" ℔ crate	— @ —	2 00 @ 3 25
APPLES—℔ barrel	75 @ 2 00	50 @ 3 50
SQUASH, ℔ bbl	50 @ 1 00	60 @ 1 00
PEARS, ℔ bbl	1 75 @10 00	2 00 @15 00
PEACHES, ℔ basket	50 @ 1 75	— @ —
PLUMS, ℔ bbl	5 00 @11 00	5 00 @10 00
GRAPES, ℔ lb	2 @ 10	5 @ 10
WHORTLEBERRIES, ℔ bush	1 50 @ 2 50	— @ —
MAPLE SUGAR, ℔ lb	— @ —	— @ —
MAPLE SYRUP, ℔ gallon	— @ —	— @ —
CIDER, ℔ gal	— @ —	6 @ 12

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Sept. 18	10,987	85	3,355	29,766	21,755	65,948
Sept. 25	9,893	46	3,168	28,511	26,111	67,729
Oct'r 2	12,552	50	3,230	23,541	21,512	63,915
Oct'r 9	10,045	12	3,166	25,387	25,282	63,892
Total for 4 Weeks	43,477	193	12,859	107,205	97,660	261,424
do. *for prev. 4 Weeks*	38,786	232	14,731	110,410	88,123	242,282
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	
Average per Week	10,869	48	3,215	26,801	24,422	
do. do. *last Month*	9,696	58	3,682	27,602	22,030	
do. do. *prev's Month*	9,871	100	3,172	28,324	20,159	

Beeves.—The market has met with a steady decline during the past month until the close, when a better feeling arrested the downward tendency. The receipts have been larger than ever, with a perfect glut of poor stock, which brought the value of this sort down to 6c. ℔ lb. The shipments to Europe of over 1,000 head weekly, keep the market steady for the best qualities, although these have given way. 10½@11c. for 1,500 lb. cattle is now hard to reach. Western dressed beef has begun to arrive, and on the whole there is no fair prospect of any better demand than now. At the close some Texans sold as low as 3¾c., others at 6¾@7½c., on 55 lbs. net per cwt. Natives sold for 7¾@9¾c., and extra for 10¼℔11c. on estimates of 57 lbs. ℔ cwt.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Sept. 18	8 @11 c.	9 @10½c.	9½c.
Sept. 25	6½@11¼c.	7½@10½c.	9 c.
Oct'r 2	7 @11 c.	8½@ 9½c.	9 c.
Oct'r 9	6¾@11 c.	7 @10 c.	9 c.

Cows.—For cows there has been little demand and small supply. Now they are wanted, and more is offered for them than has been paid during the month, when they sold for $40@$75 each.... **Calves** have sold readily; farmers taking many grassers for stock at $5 to $6.50 per head. Hog-dressed are now arriving, and sell for 10@14c. ℔ lb. for prime. Grassers are in demand at 5½@7c. ℔ lb. live weight; veals bring 9½@10c. ℔ lb. for selected..... **Sheep and Lambs.**—The market is better, and prices are improving, but so slow, as to be hardly quotable; ½c. on sheep, and ½c. ℔ lb. on lambs has perhaps been made in the month; closing at 5@6½c. for sheep, and 6½@7½c. for lambs.... **Swine** have been weak and strong alternately, closing at $6.65 ℔ 100 lbs. for Ohio live hogs of 212 lbs.; 7¾@8c. for city dressed heavy, 8¼@8½c. for medium, and 8¾c. for all under 160 lbs. Country dressed sell for 8½@9¾c. for very light pigs.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	41.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton	$56.50
do. do. guaranteed, ℔ ton	56.00
do. do. rectified, per ton	61.50
Mapes' Nitrogenized Superphosphate, per ton	45.00@ 50.00
" Plain Superphosphate (mineral), per ton	30.00@ 35.00
" Bone Superphosphate, per ton	40.00@ 45.00
" Prepared Fish Guano, per ton	35.00@ 40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton	40.00
" do " Dry ground Fish Guano, ton	45.00
" " Pine Island Guano, per ton	45.00
Fish Guano (crude in barrels), per ton	18.00
Bone Black, per ton	25.00@ 28.00
Bone Flour, per ton	40.00@ 45.00
Rawbones Ground (pure), per ton	33.00@ 40.00
Rough Bones, per ton	22.00@ 25.00
German Potash Salts, (25@35 per cent), per ton	20.00@ 25.00
Gypsum, Nova Scotia, ground, per ton	8.00@ 9.00
" In barrels, per bbl	1.25
Wood Ashes, per bushel	16 c.@18 c.
Nitrate of Potash (95 per cent.), per lb	8½c.@ 9 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2¾c.@ 3¼c.
Nitrate of Soda, per lb	4 c.@ 4½c.
Sulphate of Ammonia (25 per cent.), per lb	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia	$3.00@ $ 4.00

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remember
The Valuable Premiums.

See Page 433, and send to the Publishers for an Illustrated List of Premiums if you have not already received it.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for post-

age and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

The Centennial Pomological Exhibition.—In spite of various untoward influences, and the lack of the coöperation of many who should have aided, the show of fruit in the Pomological Building, from Sept. 11 to 16, was a great success. Fifteen thousand plates of fruit is an immense number, and as much of it was of the greatest excellence, it will be seen that the exhibition, if not what it might have been, was highly creditable. It would take too much space to enumerate the leading exhibitors, which in many cases were State and other societies, and associations and individuals from Canada. The general arrangement of the fruits was by States, and served to show the fruit raising capabilities of the different portions of the country. Kansas, besides contributing to the general exhibition, made an important and remarkable supplementary display at the Kansas house. The California fruit seemed to have been sent for sale rather than for show, and so impatient were those who had it in charge, that much of it was sold before the judges had a chance to inspect it.

The Pennsylvania Horticultural Society held its Annual Exhibition on Sept. 15 to 18. As one of its officers remarked, it was "the best show and the poorest attendance" they had had in many years; the slim attendance might have been expected, and whatever reasons induced the Society to withhold its coöperation from the Centennial, the fact is to be regretted, and is deplored by some of the Society's most useful members. At the meeting of the American Pomological Society held last year in Chicago, a delegation from the Pennsylvania Society invited the members of the Pomological to a reception to be given by them during the Centennial Exhibition. This reception was held on Sept. 18. It would not be according to the rules of good breeding for one to speak slightingly of a private entertainment which he had attended, but in this case, where the matter was published from one end of the country to the other, it is different, and we must state it as a matter of fact that the affair was simply a failure.

Forestry Associations.—The Association, of which Dr. John A. Warder is President, held its Annual Meeting on the Centennial Grounds in September. Another association met about the same time at Cape May. The first-named is composed of persons who are themselves actively engaged in forest culture. The other, so far as we are informed, is mainly interested in trying to induce the General Government to do something. The general impression seems to be that people will plant forest trees or care for those they already have, when convinced that doing so *will pay*, and that no action of the government and no commissioners or other officers of forestry are needed.

Artificial Incubator.—"J. Q., Jr.," Romney, N. H. We have no doubt that a sharp boy of fourteen years old could manage one of the Day & Co.'s incubators with great ease. Everything is very simple about it, and if attention is only given with regularity, eggs may be hatched in the winter without difficulty. Your building, lighted and heated, would answer very well for use at this season. Messrs. Day & Co.'s address is 92 Linden avenue, Baltimore, Md.

☞ Subscribe **this month for all of 1877,** and get **December** Number FREE. **See the Premium List Table** on Page 433. ☜

SALMAGUNDI.—Many a good hand-shake and greeting have we had this autumn with our readers of five to twenty-five years past, who have come from their distant homes to see the "Centennial Exposition," and taken New York City in their return route, and, of course, they have dropped in at 245 Broadway. Not a few say they came this way for that special purpose.—It makes the older editors feel young again, and gives to them a new stimulus for future work and effort, to hear so many tell of the valuable hints, suggestions, and useful information, they have gleaned from these pages.....No one thing we have written lately, has called out more hearty thanks, than our advice in September to "go to the Centennial, if possible." Multitudes say they would not have gone, but for our "clinching" advice, and *now* they would not have missed seeing it for the price of "several acres." (If any one went on account of what we said, and now regrets it, by all means let us know it.).....One of the above callers, from a somewhat distant State, after speaking of the usefulness of this journal to himself, said: "I have tried to get my townsmen to take it with me, but the usual answer is, that paper is issued down in New York and can't be adapted to *our* region!" Such reports have come from other quarters. Our friend was surprised to learn that some of our editors actually lived, and "farmed it for a living," in his own section of the country. Let us here say that though the *American Agriculturist* is printed and issued for convenience in the great Central or Metropolitan city of America, none of its editors live in New York City, and only one of them in this State. No other journal of its kind in the world has so large a number of practical Editors scattered over a wide territory, where they are not only practicing soil culture, but are observing and gathering information for every section. Our large circle of readers in distant Australia, among the colonists all round Africa, in Central Europe, in Russia, and even in far off India, all tell us it meets their wants. The fact is, the great principles of soil culture are everywhere the same, and improved implements and conveniences are alike useful everywhere....A good illustration of this was in a journal nearly a thousand miles westward, which, in a double-leaded editorial, advised its readers not to go to an eastern city for an agricultural paper, but to patronize one at home, adapted to their own wants. *Yet in that very paper, of the* **21** *columns of reading matter,* **14** *columns were taken from original matter prepared for and published in the American Agriculturist.*

The Maryland Horticultural Society held its Exhibition from Sept. 19 to 26, and we regret our inability to accept the invitation politely tendered, to be present. Maryland has made great progress in horticultural matters within a few years, towards which this Society has helped.

A New Work on Irrigation.—During the past few years, the serious losses experienced by gardeners and fruit raisers at the East; the failure of meadows over a large portion of the country, and the gradual settlement of the partially arid and rainless districts on the western slope of the continent, and in the plains and valleys adjacent to the Rocky Mountains, have made it clearly apparent that the practice of irrigation must be resorted to, both to prevent these losses, and to utilize vast areas of the most fertile lands, wanting only water to make them productive. Hitherto there has been no work upon irrigation published in the United States, and none in the English language sufficiently comprehensive to meet our wants. The books that relate to irrigation, are chiefly in the French and Italian languages, for it is in those countries that the art is practiced most generally and most scientifically, and few Americans can procure the information they need from these works. To meet the want, now so extensively experienced, and fill the void hitherto existing, as far as may perhaps be practicable at the present time, a work has been specially prepared, and is now in the press, to be shortly published by the Orange Judd Company, entitled "IRRIGATION FOR THE FARM, GARDEN AND ORCHARD, by Henry Stewart," one of the editors of the *American Agriculturist*, and a Practical Civil Engineer. In this book are gathered the history and practice of irrigation in America, up to the present time; the practice of irrigation of meadows in England, France, Germany, and Italy; the methods of laying out and managing water meadows; the irrigation of cultivated fields in those countries where crops are grown chiefly by artificial watering, the construction of irrigation works, dams, canals, and reservoirs; the special management to be given to the various field and garden crops, orchards and vineyards under irrigation; the reclaiming of salt marshes, and submerged or washed river flats; with whatever of foreign practice that may be usefully or economically applied to the conditions of surface, soil, climate, and locality in the United States, and other countries similarly situated in these respects. The work is copiously illustrated, that the text may be readily understood by any person, even if he knows nothing of engineering; and is purposely kept free from technical terms or ambiguous instructions. At the same time it offers to the scientific engineer such an introduction to the necessities of the cultivator of the soil, whether of the garden or the farm, as may assist him to lay out plans for such works as he may be called upon to construct in the exercise of his profession.

Feed for Poultry per Year.—"C. A. R.," Fredericksburg, Va. One bushel of corn or corn and wheat mixed per head is a fair allowance for common fowls for a year. They will pick up enough in addition to this to keep them in good condition if they have a run at large every day. If kept shut up some scraps of meat and vegetables will be needed in addition to the grain.

American Jersey Herd Book.—The 5th Vol. of the American Jersey Herd Book just published contains 124 pages, and with the preceding volumes 3,224 pedigrees. The 6th volume is now in course of compilation, and pedigrees for entry are received by O. B. Hadwen, Worcester, Mass. The 5th vol. is sent by mail for $2.

The Clawson Wheat.—Some foolish and malicious statements which have been made in a Western paper "to the effect that the Clawson wheat has turned out to be very inferior in the West, and especially in Michigan." It has been ascertained that the injurious report originated with a party who had other kinds of wheat to sell, and who wished to injure the popularity of the Clawson wheat. Those of our readers who have sown this wheat need not be disturbed about it. The numerous favorable statements which the report has called out, show that the Clawson wheat is just as good a wheat in the Western States as it is in New York, where in some localities it is almost the only kind sown.

Shelter for Wheat.—"J. W. A," Hannibal, Mo. To throw a furrow over the wheat in November would smother the plants instead of protecting them. A better plan would be to get some old straw-stack or pile, and scatter the straw over the field; this would be a very useful and effective protection, and a means of using up the piles of straw that are scattered over Western fields.

A Pocket Gymnasium.—Among the almost innumerable uses to which that remarkable substance, India-rubber, has been applied, one of the most curious is that of a Pocket Gymnasium, made by the Goodyear Rubber Curler Co. All gymnastic appliances are arranged so as to present some force to be overcome, and develope the muscles in doing it; the obstacle to be overcome may be the weight of one's own body, the raising of weights, etc. In the Pocket Gymnasium the exercise is gained in overcoming the elasticity of an India-rubber cylinder fitted for the purpose, and though exceedingly simple, is capable of affording a great variety of muscular exercise.

Fall Planting—Choice Ornamental Trees and Shrubs.—Those who would plant trees and shrubs in their grounds, or have fruit trees in their gardens, find it difficult to make a selection. The number of kinds in a catalogue is quite bewildering to persons not familiar with plants, and such are as likely to make an unsuitable selection as a good one. As will be seen by our advertising columns, (p. 439), S. B. Parsons & Sons, Flushing, N. Y., present a *selected* list of fruit trees and choice ornamental plants, with their prices attached, so that any one may at a glance order such kinds as he may prefer, feeling sure that he can not go astray where all are good. Messrs. Parsons & Sons are widely known for the excellence and variety of their Camellias, Azaleas, Roses, and other plants for the greenhouse or window.

Importation of Stock.—"J. B.," Blackpool, Eng. It would be a risky business for a person who understands nothing about importing stock, to bring animals to America from England, and a certain loss to bring them to the city of New York for sale, there being no market in that city for farm or breeding stock. It is safe for all persons to avoid investing money in any business of which they are entirely ignorant.

EVERYBODY IS GLAD TO GET Good and Valuable Things without Money, and with but Trifling Effort.—This is just what **every one of our readers can do.** Thousands have done it within the last few years, supplying themselves with various useful and desirable articles, and we want thousands more to improve the privilege now offered. They can thus both benefit themselves, and do others good. The way to do it was explained in a Supplement Sheet with this Journal last month, and is referred to again on page 433 in this number. **Begin to-day;** for you will notice that subscriptions for 1877, received **NOW,** commence at once, and the paper is sent with no extra charge to the end of 1877.

Read the Advertisements.—It would save much trouble in writing and replying to letters, if those who wish to inquire about machines, implements, animals, breeders, fertilizers, books, and various other matters, would first read over the advertisements. The pages devoted to these always contain reading that is of interest to everybody, and those who read these pages may learn where to find what they want without writing to us for the information which is here placed before them every month. We can not say which article is *the best;* in many respects they are all the best, because nothing is admitted to these pages unless it is known to be trustworthy. What may please one person may not suit another, and where all are good it matters little really which particular one is chosen. The proper plan is to write to more than one maker or dealer, and after hearing from them, choose that which will apparently suit best.

"Timely Topics," is the title of an advertising sheet issued by George Allen & Co., Newbern, N. C. These gentlemen are large dealers in agricultural implements and machinery, building materials, fertilizers, seeds, etc. The sheet is devoted to items especially interesting to southern agriculturists, but not content with giving their customers this, they also supply them with the *American Agriculturist*, and we mention as a "Timely Topic," that this firm have just sent in their subscription for seven hundred (700) copies of this paper for 1877, for distribution to their customers. Messrs. George Allen & Co., have subscribed liberally for several years, and this increase of their list to 700, shows that they find it a good investment; such enterprise as they exhibit is sure to succeed, and no doubt others might find profit in following their example.

What is the Matter in the Cotton States?—"Timely Topics," a sheet published by Geo. Allen & Co., Agricultural Warehouse, Newbern, N. C., in discussing the present condition of the cotton growers, states that though the cotton sold since the war, produced an aggregate sum of $2,500,000,000, the farmers are still poor. It finds the cause of this poverty in the fact that pork, flour, bacon, lard, butter, shoes, clothing, and other articles of prime necessity, which should be produced at home, are purchased from the North and West. It urges that farmers raise enough provisions to pay for the cultivation and packing of their cotton. In all of which there is much truth.

The Growing Wheat Crop.—The appearance of the growing wheat at the present is very promising, excepting where it has been sown upon the oat stubble. In these cases the abundant yellow patches, consisting of oats killed by frost, show how much the wheat has been robbed and injured by these *weeds.* Where frost has not been severe enough to kill the oats, the thrifty appearance of some fields is due in great part to the oats which have grown rampantly under the influence of the cool, moist weather, and the manuring given to the wheat. How much the wheat suffers is only partly shown by the thriftiness of the oats, or the seared condition of the frost-stricken fields. Had all these green bunches or brown spaces been wheat instead of oats, there would have been a useful growth instead of an injurious one. Not only has the room needed for the wheat been occupied and the plants crowded out, but a greedy, intrusive weed has been fed at the expense of the crop. There is not only a loss, but a damage in addition, and this will occur so long as wheat follows oats in this too frequent objectionable rotation.

Goats in Virginia.—The Superintendent of Public Instruction of Virginia, W. A. Ruffner, Esq., twenty years ago published a pamphlet urging the introduction of Angora goats upon the waste lands of that State. Since then the feasibility of goat herding in that locality has become more probable than it was then, both for the reason that a market is now being established for the mohair, and for the pelts, and because the nature of these animals is now better understood than it then was. The hair of the goat is now consumed in this country, and the manufactures using it will probably increase; the unshorn pelts are in demand for rugs and mats, and the shorn pelts are made into morocco leather. We see no reason why goat herding should not be made a profitable industry, especially amongst the laboring people, who, if they possessed flocks of goats, would probably stop keeping so many dogs. Goats are hardier than sheep and will resist dogs better, but when kept in herds they are subject to disease, if neglected, and dogs will kill them if permitted to do so.

Forest Tree Planting in Mass.—In June last, p. 208, we gave an account of the prizes, $3,000, offered by the Mass. Society for the Promotion of Agriculture, for the best plantations of European Larch, and American White Ash, and stated the conditions of the award. We would remind those who propose to compete, that their entries must be made before Dec. 1st, 1876, by addressing E. A. Perkins, Esq., Jamaica Plain, Mass. We shall be surprised if a goodly number of our enterprising Massachusetts friends do not compete for these prizes. It is not often that one can put himself in the way of a handsome prize, and whether he succeeds or fails, be better off for having made the effort. Five acres in either European Larch or White Ash, is a capital thing to have, and if, moreover, one can be paid for improving his own estate by planting it, he will be doubly fortunate.

How to Study Surveying.—"J. W.," Hannibal, Mo. To learn the theory of surveying, it is needed first to study a high school arithmetic; then algebra; then geometry and plane and spherical trigonometry. Useful books for this purpose are Davies' Arithmetic; Algebra, and the Elements of Geometry, etc., from the works of A. M. Legendre. In the meantime some practice in the field with a surveyor would be necessary, to learn the use of the implements employed.

Wheat from Northern Minnesota.—"C. E. B.," Duluth, Minn., sends a sample of spring wheat grown six miles north of that city. The wheat is a dark flinty variety, and of a fair quality. This northern region is not exactly a paradise, especially in the long dreary winter which is common there, and which would suit a farmer who loves a long resting spell, but yet it is productive of good grass, roots, and spring grains. There is a place for every one in the world, and the probability is that northern Minnesota will find inhabitants.

Notice for November.—It seems necessary to repeat one fact monthly, namely, that communications without signatures go directly into the waste basket. What would any of our readers think were they to receive an anonymous letter? We know of no earthly reason why editors are not entitled to be treated according to the ordinary rules of politeness, and we do not propose to encourage the writing of anonymous letters by noticing them. If the matter of a letter is not of sufficient importance for the writer to sign it, it is not of sufficient consequence for us to read it. Some well-meaning persons, because they see answers given to "A Subscriber" or "A Constant Reader," no doubt are led to think this the proper way to sign a note to an editor. A person may sign his article as suits his fancy, but the real name must be given besides. We never publish a name where there are any indications that the writer would withhold it.

A Successful Ditching Machine.—Ex-Governor and now Senator Randolph, of New Jersey, has shown his interest in agriculture by contributing to it an important labor-saving appliance in Randolph's Ditcher. We have seen this machine at several fairs, and all who have examined it and seen it in operation are impressed with its value. We may at another time describe the machine, which is a model of simplicity, and as is the case with all such inventions, the result of much thought and costly experiment. It may serve for various uses, but its chief importance is as a ditcher to open a trench for laying drain tiles. The smallest size is for two horses, and larger ones require eight horses or steam-power. It is claimed, and guaranteed, that the use of the machine will effect a saving of not less than 300 per cent. over hard labor.

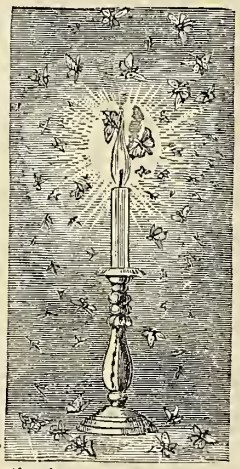
"The City of Holyoke," is the title of an illustrated pamphlet, intended to show the remarkable water power, and varied uses made of it, in Holyoke, Mass., a city noted for its industries. It is issued from the office of the "Holyoke Transcript," and its mechanical appearance is most creditable to the publishers.

Fairs in November.—We find but one, the Texas State Fair, which begins this month; that will be held from the 14th to 18th inclusive, at Austin. A few others continue into the early part of the month. The Virginia State Fair at Richmond closes on the 3rd. The Iowa Industrial Fair at Des Moines on the 5th. That of the American Institute, New York City, on the 11th. Besides these the Fair of Fairs, the Centennial, ends on the 10th, the Centennial Poultry Show closing on the 6th

"Always Handy" is the name for a little household contrivance we illustrated in the Household Department in Dec. 1874. It consists of shelves of light open-work casting that, by an ingenious though simple arrangement, may be attached to any upright stovepipe; these shelves, one or several, can be placed at any convenient hight, and are so constructed that when not in use they will swing back quite out of the way. We had a set two years ago, and have found that for heating plates, keeping dishes warm, drying articles, and numerous other uses they illustrate the appropriateness of the title "Always Handy." The American Manufacturing Co., New Haven, Conn., make the article.

Proper Floor for an Ice House.—"J. R.," Succasunna, N. J. The best floor for an ice house is one of boards or plank laid upon sleepers bedded in gravel. A gravel or sand foundation is the best, and the floor should be laid so that no air can gain access beneath it from without. There should also be provided a drain so constructed that the water from the melted ice can escape into the ground, but which will not admit air to the ice.

Sundry Humbugs.



Nothing is more characteristic of our modern life, than the extent to which advertising is used as a medium between individuals and the public. A stranger in a town, large or small, by looking over the advertisements of the local paper, can form a very correct idea of the place. If the advertisements are few, and have the appearance of being "standing," he is quite safe in concluding that he is in one of those slow-going, dead-and-alive places, that were finished some years ago, and that the people are of a kind that know little about *change*, whether social or financial. On the other hand, if the advertisements appear fresh, brief, and snappy, if it only be to announce the fresh arrival of salt fish, or a new invoice of clothes-pins, it is fair to infer that the paper is published in a wide-awake community. It is not necessary to enlarge upon the advantages of judicious advertising—to the individual who speaks, and to the many who are spoken to. Like other good things, it is liable to perversion to bad uses, and it is to the

ABUSES OF ADVERTISING

that we would call attention. Publishers in general disclaim all responsibility for whatever of ill may follow their printing and issuing the advertisements of irresponsible parties, and even some will give to the world announcements that they would not allow their own daughters and sons even to read, much less to follow. In brief, we aim to exclude not only all the advertisements that are on their face improper, but those that are ambiguous or liable to deceive. The sharp American renders the old saying *caveat emptor*, ("let the buyer beware"), into "your eyes are your chaps," and has no scruples of conscience at pocketing the price of a damaged garment or a spavined horse; it is the buyers fault if he did not see the defects, which the seller knew, but did not point out. But these

HUMBUGGING ADVERTISEMENTS

are worse still, the buyer does not even see the article that he may make his "eyes his chaps," and they are not designed for "sharp Americans," but for the people in general, who average very far from "sharp." The advertising columns of the papers in every large city support numerous sharks and swindlers; these rascals reach their ends in so many ways that we can only allude to one or two of them, and these of a kind that come most frequently to our knowledge, *i. e.*, the employment swindles. These chaps know that in every city there are many who have been thrown out of employment, and many others—usually foolish young men from the country, who have left their dull life on the farm in the vain

hope of bettering their condition in the city. Many of the advertisements offering employment are intended solely to work upon the necessities or the desperation of persons of these classes. Whenever there appears an advertisement under "Help Wanted," in which "a young man" is requested to apply in the "handwriting of the applicant" and "enclose a 3-cent stamp for an answer," it is safe to put it down as a swindle. Three cents is but little, but cases are known where over 500 replies have been sent in one day to a single advertisement of this kind; the advertisement, even if put in several papers, with all other expenses, need not cost over $5—and the advertiser clears $10, with but little trouble. Another form of the swindle is to offer to put one in the way of employment for 25c., 50c., or $1, as the case may be, the lower sums being found the most productive to swindlers, as there are more poor dupes who can raise the smaller than can the larger amount. If the applicant gets any reply at all, it is to advise him to engage in the sale of some ladies' bogus jewelry, or other nonsense. Many of these advertisements offering employment come from those trashy variety stores, where the applicant must deposit $5 for an outfit of stuff to sell, and if he does it, is himself thoroughly sold. Some of the bolder operators allow the applicant to call at their office, where employment will be secured by the payment of $5. The poor fellow pays the $5, probably his very last, and is told to "call after dinner." When he calls no one there knows him, and he cannot pick out the man to whom he paid the money (he being, of course, at another shop of the same kind); the chaps in the office bluff the poor fellow, tell him he is a swindler, and if he doesn't get out they will call in a policeman. What can the poor, penniless and friendless stranger do? Our friends in the country should understand that all large cities have whole armies of unemployed men, women, boys and girls, and should pay no heed whatever to any advertisements offering employment, however tempting it may seem....Inquiries are still made about the

"GRANITE AGRICULTURAL WORKS,"

and one friend took the trouble to write out the manner of operating by the agents of these remarkable "works." As this adds nothing new to what was given in these columns last month, we need not publish it. Connecticut appears to have been a productive field (not an oat, but a rete field) for these fellows, and the victims have taken, as stated last month, united action. Since the meeting there referred to, another has been held: it may be called an "experience meeting," and the accounts given, by those present, of the ways in which they were "taken in and done for" are amusing reading to any but those who paid from $200 to $300, for their experience. These men are firm in their resistance to payment of the notes they gave, have fully organized for mutual help, have created a fund to defray expenses and, what is quite as important as anything, appointed a committee on correspondence. Messrs. John S. Kirkham, Newington, Geo. W. Bidwell, Manchester, and Fred. P. Bissell, Newington, all in Conn. They invite any interested party to write and state his case, and as it is not stated as being restricted to citizens of Connecticut, we infer that they invite correspondence from those in other States, and we can not do better than to refer those who have written us to this committee.

FARMERS BEWARE OF WONDERFUL SEEDS!

Swindlers in seeds too often find easy victims among farmers for this reason. One who grows grain and finds that his crop of wheat for instance is only 15 or 20 bushels to the acre, is desirous of doing better; he reads of a variety that is said to produce 40 or 60 bushels to the acre: that is what he wants to make grain-growing profitable, he thinks, and sends for it, paying a round price. Farmers are not the only people who attribute a result to the wrong cause, and it is easier to lay the poor wheat crops to the seed, than to their land or to themselves. The farmer who is caught by the 40-or-60-bushels-to-the-acre wheat, will no doubt, in time, learn that he has heretofore taken off his fields all the wheat there was in them. That is, no matter what the variety of wheat, there is not *raw material* enough in an acre of his land, to make more than 15 or 20 bushels of *any* kind. The humbug column is not the place to discuss the principles of agriculture, but it is a want of knowledge, or a forgetfulness, of these that makes it so easy to humbug farmers. We do not mean to say that all grains offered as very productive are frauds, but are quite sure that the manner of offering some of them is liable to deceive. Tennessee seems to be the head quarters of most remarkable dealers in most remarkable seeds, and we have the circulars and advertising sheets of several concerns offering things which the advertisers very truly say are not to be had elsewhere. It is well for farmers everywhere to remember that really valuable grains, and other seeds, do not first make their appearance in some obscure town in Tennessee, New York, or other State, and things that hail from such localities can not have been tested in such a manner as will warrant any one in depending upon them *for a crop*. We encourage experiments, but discourage the abandoning a well *tried* kind for a novelty. If any one *can afford* to test these Tennessee agricultural wonders, by all means let him do so and report the results. We had occasion to show up the pretensions of a Virginia chap with his true "Sugar Cane, *saccharum officinarum*." One of the Tennessee concerns offers "West India Sugar Cane Seed" in very similar terms, but does not tell what it is. They say it is "adapted to any variety of soil or climate that will produce Indian Corn, Irish Potatoes or Sorghum."—Now then gentlemen, what is it?

MEDICAL MATTERS.

On several occasions we have remarked that the quack medicine chaps were not up to our expectations in this Centennial year. We have had a nauseating repetition of the Doctor-Clark-Johnson-Seven-Barks-Bell-Tongue-Mother-Noble style, but these are wearying, and the whole thing seemed to be "played out" as it were. Though late in the year, Geo. Hutchison comes to the rescue. George lives—well we don't want to be sectional—in the United States.—George is rich—i. e., he owns up to a "little fortune." George isn't above owning it, he's none of your stuck-up millionaires, George isn't, he "hauled in his dibs," "raked in his pile," not at the steck board, nor yet as an "operator on the curbstone" of "the street,"—George didn't get his little fortune by "selling short," whatever that may be, nor did he "heir it" as they say in the Jerseys, but it was a gradual accretion, a slow aggregation—cents grew to dimes, dimes to quarters, and quarters to dollars. Not to dilate (he don't say if his costumers died late or early), George went from house to house and sold "Indian Purgative Pills," (showing much Indianooity in the name). "Prof. Davis Pain Killer," (if old Perry D. had only caught him at it!) and, more than all, "Purifying Syrup." We haven't a column or so to spare to record the things that syrup cures, but we do not wonder that it "gained a great name." George made 18c. on each box of pills, 20c. on each bottle of "killer" and 90c. on each bottle of the "syrup." It would be easy, did we know the extent of that "little fortune," to cypher out how many he sold, or did we know how many he sold, we could cypher the size of that "little fortune,"—but this is left in mystery. One thing we are glad to hear, he says "I have made all the money I shall want to carry me through life, *provided* I continue my present economical habits." George—continue and economize! Well after setting forth all this in the best style of lithograph, which the unskilled might think was writing, he tells the one who receives it, that "A mutual friend has requested me to assist you" (George isn't that a—well a—little romancy?) and goes on to set forth how he has made that "little fortune," he proposes that the person aforesaid—What, make the medicine?—No. Take it?—No. Share the "little fortune?"—Not a bit of it.—Only "Write me and express a desire (whether by Adams' or American not stated), to engage in this enterprise."—Ah George, notwithstanding that you "take pleasure in devoting time and attention to helping others to help themselves," it looks very much as if you were "on the make," you don't tell any one anything after all, but repeat your request for correspondence. It is the old, old story, George, only you are rather worse than the rest. Most of the quacks try to sell their medicines, your plan is to increase the number of pill peddlers.

A Word from the Editors.

Though editors address thousands of persons they never saw, and never expect to see, they are nevertheless not "insensible to the grateful incense of praise," and one of the pleasant rewards of editorial labor is the satisfaction of knowing that our work is acceptable, and that others have been benefited by our teachings, and the record of our experience. While we are in almost daily receipt of kind words of encouragement, not only from friends in this country, but from those abroad, it is rare that we publish the good things said to us and of us, yet they are not unheeded. They have the effect to make us all the more desirous to deserve the good opinions thus expressed, and serve as incentives to renewed exertions. At this time, on the eve of a new volume, when the Publishers are taking measures to extend the circulation of the *American Agriculturist*, we feel that a few extracts from our editorial correspondence may appropriately be given, that those who are not already readers, may learn what is said by those to whom we have for a long time made our monthly visits.

A friend in Portsmouth, O., writes: "I have been a subscriber to and reader of the *American Agriculturist* for years, and find that you give information in almost every number that is worth the subscription price for the whole year."

Another writes from Robertson Co., Texas: "I highly appreciate your journal; it is worth the price of subscription, if only for its exposure of humbugs, for the benefit of those who do not 'know the ropes.' I shall endeavor to obtain some subscribers for next year."

From "Near the North Pole," a Canada friend, who thus describes his locality, writes: "I have now subscribed for your journal for two years, and, with thousands of others, have been delighted with its contents; I am in hopes of securing some of my neighbors as subscribers for next year, as we find there is much that suits us, though so near the North Pole.....While on a visit last year to England, your journal was particularly admired by some of my friends, who thought it a fine thing for us to have such help."

The following is from Crawford Co., Pa.: "Some ten years ago, as I was opening the fence to go in from the road to build the house where I now live, and try to make a living from the land I now occupy, a man of unusual intelligence came along, and asked what I was intending to do. When I told him, he said: 'I would not take that piece of land, and try to live on it, if it were given to me.' Now I am frequently told that I have a fine place. Why I speak of it is this: I find that many, indeed most all, of my ideas of doing things have been taken from your *most valuable paper*. Every year I get a book or so from you. It was through your paper that I learned how to raise strawberries. I had some this year that measured eight inches round. It was from your paper that I learned of Peter Henderson's book, which I got; in the same way I learned of J. J. H. Gregory, and his method of raising squashes and cabbages. But in speaking of these out-door matters, I have not told you half. My wife loves the *American Agriculturist*, and our table has been enriched by many new and excellent dishes, made from recipes found in its pages. I once got up a large club for your paper, but as I did not see much improvement in these who took it, I became discouraged, but I have changed my mind, and thinking that a good thing should be persevered in, I am going to work again steadily."

We might go on and fill column after column with extracts of similar import, which, like these, show how the *American Agriculturist* is regarded by those who have known it the longest. There are hundreds, and probably thousands, in all parts of the country, who trace their success directly to its teachings—success not only in a business view, but in the great addition to their home comforts. As large as our circle of readers always is, it is capable of indefinite extension, and both publishers and editors will see to it that whatever has made the paper valuable in the past, shall be retained, and that whatever may increase its usefulness, shall be added.

The Hartford Pump.—In Oct. 1874 we gave an illustrated description of a most ingenious invention for raising water by means of compressed air. The power is obtained by a wind-mill situated wherever most convenient, and is conveyed to the pump itself, which may be a quarter of a mile, or more, distant, by means of compressed air sent through a tube from the mill. The apparatus has given much satisfaction where it has been introduced, the fact that the pump may be at a distance from the power—which in many cases may be other than wind—adapting it to localities where the usual form of pump cannot be employed. The pump, while remaining the same in principle and essentially so in structure, as the one illustrated, has received numerous improvements, suggested by the experience of the past two years; these consist in the use of iron and steel in parts of the windmill which were formerly of wood, a more effective oiling of the working parts, and essential modifications of the valves, all of which contribute to the efficiency of the machine. The apparatus is made by the Hartford Pump Co., of Conn.

The Centennial.—But ten days more, and the greatest gathering of the products of human art and labor that the world has ever seen, will be closed. To those who can yet go, we say do not fail even at this late day to make even a short visit. Read what has been said in former numbers. We have been twice since our last article was written, and can emphasize everything we have already said.

Basket Items continued on page 433.

National Agricultural Congress.

The fifth session of the National Agricultural Congress was held at the Centennial Exhibition, in the Judges' Pavillion, on the 12th, 13th, and 14th of September. The President, Hon. W. C. Flagg, of Illinois, read a paper on the "Past Condition and Progress of American Agriculture," in which a rather gloomy view was given of the present status of agricultural affairs—at least so far as

the eastern portion of the country is concerned. Prof. G. E. Morrow, of the Iowa Agricultural College, Secretary of the Association, explained the objects of the Congress, which is the collection and distribution of information relating to agriculture throughout the United States, in any manner that may contribute to its prosperity. A paper written by Joseph Harris, of Rochester, N. Y., on the "Outlook of American Agriculture," and another on Agricultural Literature, by Dr. E. L. Sturtevant, of Massachusetts, were read by the Secretary. Mr. Harris, in his paper, advocated intelligent and industrious farming rather than legislative help as the needed element for success in our agriculture. J. R. Dodge, of the Agricultural Department at Washington, read a paper on Agricultural Statistics, illustrating the practical value to farmers of a complete, accurate, and especially a prompt statement of production, consumption, price, sale, and shipment of agricultural commodities. Dr. Janes, Commissioner of Agriculture of Georgia, gave an address upon Agricultural Reform. In the speaker's own locality "misdirected individual enterprise, speculative farming, a ruinous credit system, and ignorant or injudicious purchase and use of valueless artificial fertilizers," were considered as calling for reform. Lewis F. Allen, of N. Y., addressed the meeting upon the subject of Live Stock Interests, and Col. T. Claiborne, in a speech on Southern Agriculture, enlarged upon the vast scope for immigration in the Southern States and the urgent need for it. X. A. Willard treated of American Dairying; the subject of Agricultural Education was discussed by President Welsh, of the Iowa Agricultural College, and Dr. Townsend, of the Ohio College. A series of resolutions were introduced by Charles E. Riley, of Missouri, calling the attention of the Congress to the devastation caused by locusts in the West, and urging some measures for the remedy or palliation of the scourge. Previous to the close of the meeting, it was decided to hold the next session at Chicago in 1877. President Flagg was re-elected, and Horace Smith, of Philadelphia, was made Secretary.

Bee Notes for November.

BY L. C. ROOT, MOHAWK, N. Y.

In most sections, bees should be placed in winter quarters during the present month, the precise date depending on the severity of the weather. Most of the earlier writers have advised that the hives be left on their summer stands until quite late in the season, in order to give the bees the very last opportunity to fly. Later experience proves this to be less essential. We have proof of the need of keeping bees housed during the early spring months, and I believe the necessity of avoiding a similar loss during the later fall months to be equally obvious. I think that there is more danger of bees being housed too late than too early. In making benches on which to place bees in winter quarters, I would make them in sections, so that a less number of hives shall be placed upon each one. In this way a less number will be disturbed in putting them in place in the fall, and in removing them in the spring. At the latter time it will be found to be of especial advantage. Details of my mode of indoor wintering were given in November, 1875.

The Season of 1876.

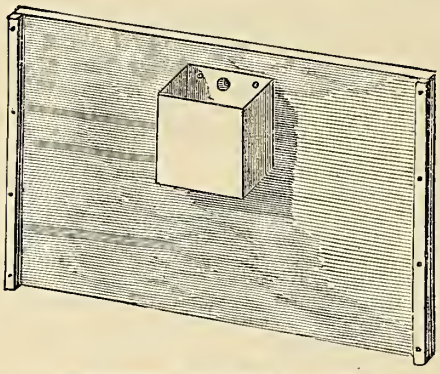
Although the past season has not been one of the best for honey in most localities, some have gained what might be called a good yield. Some parties in Western N. Y. report an average of 100 lbs. surplus from a swarm. My own yield was much better than last year, yet not as good as the year before. I commenced the season with 130 swarms, which were increased to 188, and secured between nine and ten thousand lbs. of surplus honey.

Replies to Questions.

"After-swarming, it is said, may be prevented by cutting out all queen cells but one; why leave that one?.... If I destroy *all* the queen cells and at the same time double the hive, can I, with certainty, prevent swarming, or will a second examination be necessary, and if so, how soon after the first?"——By "after-swarms" we mean all swarms that issue after the first one. After the old queen leads off the first swarm, if the hive from which the swarm issues is examined, several queen cells will be found. The swarm being without a queen, it is, of course, desirable to furnish one in the shortest possible time. If all the cells could be removed and a laying queen introduced, it would be preferable, but if you do not have a queen, remove all but one of the largest and most mature cells, which will soon hatch. Either method will usually prevent after-swarms. Preventing after-swarms, and preventing *first* swarms from issuing, require altogether different systems of management. If the best results are to be reached, it is not enough to prevent swarming, but the *desire* to swarm must be controlled. If all cells are clipped off, and the honey is extracted from the combs, the desire to swarm will usually cease. Or, if one or more frames be taken from the center of the hive and empty ones substituted, the swarming fever will usually subside, but if the queen cells be simply clipped off and the hive doubled, or boxes added, it is not at all sure that swarming will be prevented. During two different seasons we managed several apiaries by visiting them once each week, and clipping off all queen cells, but it did not prove at all satisfactory. I propose to write further upon this subject before the time for next season's operations.

"How shall I prepare sugar syrup for feeding bees?"——Add 4 pounds of "A" sugar to 1 quart of water, bring to a boil, and skim. In selecting sugar, avoid that having a bluish tint, as we have proof that it contains poison that will injure the bees. The same advice might be offered in regard to buying for family use.

"How do you use the feeder you describe in connection with the Quinby hive?"——Several have seemed to misunderstand the manner of using this feeder. It is simply a tin box 4×4×2 inches. Midway, on one side near the top, a ¾ in. hole is cut, through which the bees enter. On each side of this, nearer the top, are two smaller holes for nails to hold it in position. To use it, bore a ¾ in. hole, in one of the panels at the side of the combs, to correspond with the hole in the feeder, drive two small nails to match the smaller holes, and hang the feeder in position, as in the engraving. Fill it with the syrup, and place a thin float of wood in it, to keep the bees from drowning. As the feed is taken up by the bees, the float will settle; when near the bottom, the bees will find it difficult to ascend the side of the feeder, but by waxing the inside just below the hole, they can cling to it more readily. Keep the feeder covered with a piece of glass, through which the supply of food may be inspected. This feeding is of course done before the hive is prepared for winter.



BEE-FEEDER ATTACHED TO PANEL.

"How shall I prepare bees for out-door wintering in the Quinby Hive?"——Place the panels at the sides of the combs, and a piece of coarse sacking over the top. Pack cut-straw or chaff snugly at the sides and top.

British Reports of the Exhibition.

We have often marveled at the inability of the average Englishman to see anything good in this country, and to report accurately that which he sees. Next to reporting a thing untruthfully, the most mischievous accounts are those which ignore important things, and dwell upon those of less consequence. The Gardeners' Magazine (London), shows much liberality in presenting large, if not very accurate, engravings, of portions of the Centennial Exhibition, but the text accompanying them, proposing to give an account of the Horticultural part of the Exhibition, is more remarkable for what it omits than for what it says, and gives a most meagre idea of the affair. The collection of Mr. George Such, beyond all comparison the finest lot of plants exhibited, is thus referred to, "Amongst the Palms, mention must be made of a collection which has been sent from New Jersey, and is of the estimated value of $10,000. But the plants comprising the collection, [we should suppose that the collection "comprised" the plants. ED.], are placed in one of the smaller structures at the side."—Now here is a collection which this correspondent admits is of great value, but it is not thought worth while to say who owns it, or what part of New Jersey it comes from. This meagre notice would imply that it was all or chiefly Palms, and it does contain some very fine ones, but it also contains wonderfully fine specimens of the leading and rare kinds of other plants. Mr. Such being disposed of in this summary manner, the correspondent devotes three times the space to the collection of Mr. B. S. Williams (London), being careful to give the address in full, and abundant praise. We ourselves gave Mr. Williams much credit last month, and he richly deserves it, and we should not object had this writer given much more; what we do object to is the very unfair treatment of Mr. Such. This writer says: "The new Maiden-hair fern, *Adiantum gracillimum*, exhibited by Mr. Williams, has excited considerable interest amongst the growers of flowers and plants," etc. All very true, but the collection of Mr. Such contained a specimen of this very same fern, which was (to speak from recollection) twice or three times as large as that of Mr. Williams, and as it had not been subjected to a sea voyage, was in vastly better health and condition. The inability to see anything American, afflicts this writer when he notices the plants in the grounds belonging to Horticultural Hall. The displays of Rhododendrons by Mr. Waterer, have a special notice, and the out-door collections are disposed of thus: "The grounds which surround the building are laid out in the formal style, which is the most popular here at present, and in addition to the Rhododendrons already alluded to, it contains a most valuable collection of hollies, from the nurseries of Messrs. J. Veitch & Sons, of Chelsea." (We quote *verbatim*, the *English* is not ours.) This writer had only eyes for the plants exhibited by these two English establishments, and one would infer from his account that, as the hollies were "in addition" to the Rhododendrons, these two were the only plants in the grounds. Messrs. Veitch deserve all credit for sending their hollies, and their collection is of much interest, as showing what beautiful things may be grown in England, but which are impossible with us, unless housed in winter. This writer could not see the fine collections of evergreens of Hoopes Bro. & Thomas, the exceedingly rare plants exhibited by S. B. Parsons & Sons, and Robt. Parsons & Co, the very full collection of hardy plants of Thomas Meehan, the getting together of which involved immense labor, or the many other fine collections, which we shall notice another time, all of which are conspicuous in the grounds which this writer would have his English readers believe contained only the plants of two English nursery firms. This style of reporting the Exhibition is unfair to those who read it, as by ignoring important features, it gives them an incorrect impression, and it is eminently unfair to those exhibitors, whose misfortune of being Americans prevents any knowledge of their work from reaching their brother horticulturists abroad. The horticultural portion of the Exhibition is not what it should have been, but there is much there that can not fail to interest any true horticulturist, of whatever country, and to ignore what has been done, in the manner of this correspondent, can not be regarded as an illustration of the much talked of English love of "fair play."

Forest Tree Seeds.

The numerous inquiries as to the treatment of seeds show that much interest is felt in the raising of forest trees. We repeat the suggestions made once before, that unless one is intending to plant largely, or has abundant time to devote to his seed beds, it will generally be cheaper to purchase seedling trees than to raise them. There are several nurseries which, it will be seen from our advertising columns, make a specialty of seedlings of forest trees, and offer them at exceedingly low prices. We here condense a few points for those who wish to grow trees from the seed. Of the trees generally planted a few ripen their seed in late spring or early summer, the seed, if kept until the following spring, will be worthless, hence it must be sown immediately after it is gathered. The Red Maple, (*Acer rubrum*), the Silver or White Maple (*A. dasycarpum*) and the Elm (*Ulmus Americana*) have this peculiarity, and whoever would raise these must make arrangements to procure the seeds as soon as ripe, and sow them as soon as received. If the

seeds are good they germinate promptly and make nice little trees by autumn. There are many tree seeds that may be sown in the fall, but there is so much risk of loss by mice and from other causes that it is generally preferred to keep them until spring. Much depends upon the manner of keeping through the winter. All the Hickories, the Black Walnut and the Butternut are best kept in heaps made upon the ground and covered first with sods, and then a few inches of earth, or in the absence of sods a layer of hog-hay or straw may be placed over the nuts, and the earth heaped over that. Nearly all other seeds, including thin-shelled nuts, like chestnuts and acorns, are best preserved in sand. The sand should not be wet, nor should it be perfectly dry; it should feel slightly damp when handled; sand as it is thrown out of the bank in dry weather is often in a proper condition of moisture. The object is to prevent the nuts from drying, and to so separate them that there will be no danger of heating; if the sand is too moist the seeds will rot. The seeds should usually be mixed with twice their bulk of sand and be well distributed through it. For small quantities of seeds in sand we have found flower-pots with the holes plugged up, very convenient. The seeds of many trees will germinate freely if kept dry like garden seeds until spring, but the use of sand is safer. They should be kept in a cool place through the winter, and with some very hard-shelled seeds it is well to let them freeze and thaw a few times. The seeds of evergreens are best kept if allowed to remain in their cones, though if fresh, they generally keep well when removed. Much of the failure with these is due to sowing too late.

Cuttings of Willows, Cottonwoods and other trees raised in this manner, should be a foot or so long, and about half an inch in diameter. These are best cut in the fall or early winter, tied securely in bundles, and stored in sand in the cellar, or buried in well drained sandy soil.

Wonderful Adulteration of Seeds.—The Germans Possibly Ahead of Connecticut.

We have long heard of the "wooden nutmegs," "basswood hams," "shoe-peg oats," etc., of Connecticut, but the Germans beat this. Mr. E. H. Jenkins, formerly in the Yale Scientific School, who has recently spent some time in the German Experiment Stations, and is now Associate Director and Chemist in the Conn. Agricultural Experiment Station at Middletown, brought over some samples of seed adulterations largely practiced in Germany, which can be seen at the Station by any one interested. The process consists in grinding up quartz-rock, carefully sifting out the particles of proper size, and dying them to the color of the seeds to be adulterated. Here are artificial specimens of various clover seeds, for example, so perfect, that only a practiced eye would detect from one-fifth to one-third of the adulterated seeds mixed with the genuine product. These artificial imitations of clover seed are supplied at 1 to 3 cents per lb., to be mixed with seeds worth 15 to 20 cents per lb. Mr. Jenkins and Mr. Warnecke, who also brought over several samples of the adulterations in grass seeds, are now investigating the seeds of this country, not only to see how far such adulterations are introduced here, but also to test the percentage of vitality in those sold in our markets. It is well known by the initiated, that some unscrupulous dealers buy up and mix old lifeless seeds, carried over from year to year, with the new crop, selling all as fresh seeds. This is an additional important work carried on by the Conn. Agl. Experiment Station, which will be decidedly useful, not only to Connecticut, but to the whole country. Mr. Warnecke, now chemist at the Conn. Station, has had much experience in the German Stations, with Prof. Stohmann, in Leipsic, with Prof. Knop, of Tharandt, etc. We are well aware that our leading seedsmen take every precaution to have their seeds of the best quality, and such will be as much interested as any in the exposure of frauds in imported and other seeds.

Science Applied to Farming.—XXIII.

BY PROF. W. O. ATWATER.

Fertilizer Mixtures.

Mr. J. F., of Maine, has a piece of old land from which he wishes to raise a crop of wheat with chemical fertilizers. The soil is "pretty well run out," and he thinks it will be necessary to supply just about as much plant-food as the crop will need. He wants to know what materials will be required, and how he can best procure them.

Table 31, in the June number of the *American Agriculturist*, shows the average composition of a number of different kinds of crops and fertilizers. As explained in the May and June articles, besides the water which we do not need to take into account here, the materials which the crops remove from the soil are the nitrogen of the organic matter and the mineral matter or ash. Here are the amounts of these in 1,000 lbs. each of wheat grain and straw, as given in the Table referred to.

Table 33. 1,000 LBS. CONTAIN	Nitrogen in Organic Matter.	INGREDIENTS OF ASH. Potash.	Soda.	Lime.	Magnesia.	Phosphoric Acid.	Sulphuric Acid.	Silica.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Wheat, grain	20.8	5.3	0.4	0.6	2.0	7.9	0.1	0.4
Wheat, straw	3.2	6.3	0.6	2.7	1.1	2.2	1.1	31.2

As has been explained in previous articles, we need not restore all of these materials in manuring. Soda and silica are required only in minute quantities, if at all, for plant-food, and are furnished in abundance by every ordinary soil. Most soils supply enough magnesia for wheat, and indeed for nearly all ordinary crops. Lime and sulphuric acid are probably more often lacking. The ingredients most apt to be deficient are nitrogen, phosphoric acid, and potash. The phosphates which are used as fertilizers to supply phosphoric acid, furnish lime also, and the superphosphates contain sulphuric acid in addition, so that if we use superphosphates to feed our wheat crop, we shall supply it not only with phosphoric acid, but also with sulphuric acid and lime. Mr. F.'s question then resolves itself practically into this: How much nitrogen, phosphoric acid, and potash, will be needed by a wheat crop, and what fertilizers will furnish these in the best and cheapest form?

What Materials does the Wheat Crop take from the Soil?

Suppose that a crop of thirty bushels of wheat is to be provided for. At 60 lbs. to the bushel, the weight of the grain would be (60 × 30) 1,800 lbs. Suppose, further, that we have 2½ lbs. of straw (including chaff) to each lb. of wheat. Our crop of 30 bushels will consist of 1,800 lbs. of grain and 4,500 lbs. of straw. By the Table, 1,000 lbs. of wheat grain will contain 20.8 lbs. of nitrogen, and 1,800 lbs. would contain 1.8 times as much, or 37.4 lbs. In like manner the 1,000 lbs. of straw would contain 3.2 lbs. of nitrogen, and 4,500 lbs. would require 14.4 lbs. By similar calculations we should have:

Table 34. WHEAT CROP.	CONTAINS Nitrogen.	Phosphoric Acid.	Potash.
	lbs.	lbs.	lbs.
Grain, 30 bus. (1,800 lbs.)	37.4	14.2	9.5
Straw, 4,500 lbs	14.4	9.9	28.3
Total Crop	51.8	24.1	37.8

Mr. F. says that his object is not to permanently enrich his land, but simply to get a crop with the least practicable outlay for fertilizers. For this purpose he must apply materials that will be immediately taken up by the crop. That is to say, the nitrogen, phosphoric acid, and potash, must be in readily available forms, so as to act at once. Assuming now that the crop will be of the size and composition of that in the Table, and that it will require and use, if they are supplied in fertilizers, just the amounts of food ingredients there stated, Mr. F. will want about 52 lbs. of nitrogen, 24 lbs. of phosphoric acid, and 38 lbs. of potash. The next question to be answered, then, will be:

What Commercial Fertilizers will furnish the Nitrogen, Phosphoric Acid, and Potash in the best Form and at the lowest Cost per Pound?

Among the commercial fertilizers which contain nitrogen in readily available forms, are sulphate of ammonia, nitrate of soda, dried blood, and meat scrap. Phosphoric acid is contained in the soluble form in superphosphates. Potash will generally be best obtained in German Potash Salts. Nitrogen and phosphoric acid together are furnished in bone, ammoniated superphosphates, fish manures, and Peruvian guano. They are in very readily available and concentrated condition in Peruvian guano, less so in the others—their action being generally slowest in bone. Peruvian guano and a few of the common ammoniated superphosphates contain small quantities of potash. Which of these articles it will be most economical for Mr. F., will depend on various circumstances, particularly their cost in the place where he can most conveniently make his purchases. In the larger cities of the Atlantic Seaboard, like Boston, New York, Philadelphia, and Baltimore, he will be able to obtain any of them of trustworthy dealers. The prices will vary with the place of purchase and amount and time of payment. Suppose he uses sulphate of ammonia with 20 per cent of nitrogen, which can be bought for about $5.00 cash per 100 lbs., superphosphate with 14 per cent soluble phosphoric acid at $2.00 per 100 lbs., and chloride of potassium with 50 per cent of potash at $3 00 per 100 lbs. If the sulphate of ammonia contains 20 per cent of nitrogen, or 20 lbs. in 100, a simple calculation by the rule of three will show that 260 lbs. would furnish the 52 lbs. named above. At $5.00 per 100, the 260 lbs. of sulphate of ammonia, with 52 lbs. of nitrogen, would cost $13.00. In the same way we can calculate the proportions and cost of a mixture of fertilizers for 30 bushels of wheat, as follows:

KIND OF FERTILIZER.	lbs.	furnishing	per cent.	lbs.	Cost.
Sulphate of Ammonia	60	Nitrogen.	20 =	52	$13.00
Superphosphate	171	Phos. acid soluble	14 =	24	3.42
Chloride of Potassium	76	Potash	50 =	38	2.28
					$18.70

There are of course a good many other fertilizers from which such mixtures as the above might be prepared, some of which would furnish the valuable ingredients more economically. The 52 lbs. of nitrogen in the sulphate of ammonia cost, by the above figures, $13.00, which brings the nitrogen at about 25 cts. per lb. The soluble phosphoric acid in the superphosphate would, in like manner, (if no insoluble phosphoric acid were present), cost a little over 14 cts. per lb. Peruvian guano, which furnishes these materials in forms in which they are very readily available and most excellent for grain crops, is now offered at prices which bring nitrogen at about 21 cts., and soluble phosphoric acid at 10 cts. per lb. To give an at all complete and satisfactory answer to the inquiries of Mr. F. and several others about this topic, will require a detailed statement of the composition and cost of a number of the fertilizers obtainable in our markets, which, for want of space here, I shall have to defer until another time.

I have selected these inquiries as a text for the present article, because they were concisely and squarely put, and cover some very important ground. It would be wrong to dismiss them, however, without noting several facts which very materially affect the subject. We have been assuming that Mr. F.'s wheat crop would contain the proportions of food ingredients given in tables 31 and 33. But it must be borne in mind that these figures represent only general averages, and those of European analyses, and that individual crops will vary more or less from these proportions. We have assumed also that the crop would derive these materials entirely from the soil. This is true for the mineral matters, but many plants gather part of their nitrogen from the air, though in the case of grain crops the amount thus obtained would probably be extremely small. But a more serious error implied in our calculations above, rests in the assumption that the crop would, in the course of its growth, take from the soil just as much food-materials, and no more or less, than we supply in

the fertilizers. Every ordinary soil has a certain capacity for production, a certain *natural strength*, or natural fertility, measured by a variety of circumstances, chief among which is the quantity of plant-food which it can of itself continually supply for the growth of successive crops, after previous ones have been removed. Now this natural fertility, or the consequent natural yield, is a very important factor of every manured crop, and it would be more nearly correct, to expect from the use of the fertilizer an increase above the natural yield, corresponding to the amount of fertilizing material added. But in practice we do not always realize just this proportion of increase Sometimes we get a good deal more and sometimes a good deal less increase of crop than we apply food for. The reasons for this are manifold. The soil may be too dry or too wet, too heavy or too light, too close or too porous, to favor the most complete utilization of the fertilizer. There are, for instance, a great many soils where heavy manuring will not bring a corresponding return, for the simple reason that they either do not receive, or are not capable of retaining enough moisture to enable the crop to make use of all the plant-food that may be supplied. On such soils as these, heavy manuring and "high farming" cannot be made to pay, unless, of course, it be by aid of irrigation. In dry seasons the case would be similar on soils naturally more moist.

On the other hand, the increase above the natural yield is sometimes much greater than would correspond to the amount of fertilizer applied. The ingredients of fertilizers, by their chemical and physical action, aid in rendering materials previously existing in the soil available to plants. By thus bringing the inert plant-food of the soil into action, the fertilizers may increase the yield up to a point considerably above that to which their own supply could raise it, even if entirely utilized.

We are speaking of fertilizer mixtures containing the food ingredients in the proportions in which they are used by crops. From the stand-point of economy, there is a more serious objection to the promiscuous use of such mixtures, than either of those above alleged. Their object is to supply necessary plant-food. What will be needed in a given case will depend on two things: what the crop requires, and what the soil supplies. These mixtures take into account only the needs of the crop, the supply from the soil (and, in the case of nitrogen, that from the air) is left entirely out of consideration. There are a great many soils that furnish enough of potash, for instance, for the wants of any common crop, and continue to do so, year after year, provided phosphates and nitrogen are applied in sufficient quantities. The experimental fields of Messrs. Lawes and Gilbert, in England, spoken of in the July article of this series, are an excellent example. For over thirty years this soil has given excellent crops of grain, with mixtures of phosphates and nitrogenous fertilizers, and there are no signs of its being depleted by this treatment. To have added potash during all this time, would have been to store up in the soil a large quantity of material, useful in itself, indeed, but useless in this case, because not needed. The money spent for potash would have been wasted. Again, certain crops, like clover, seem to have a faculty of gathering up nitrogen from the air, and from the deeper layers of the soil, so that if the other food ingredients are supplied, they bring large yields, where grain crops would fail from lack of nitrogen. Such crops are little benefited by nitrogenous fertilizers, and yet clover is a great deal richer in nitrogen than wheat. A fertilizer mixture for clover, prepared on the plan we have been discussing, would contain a great deal more nitrogen than one for a corresponding wheat crop. A large part of the nitrogen would, so far as the clover is concerned, be practically wasted, and a glance at the figures in the wheat formula above, will show that nitrogen is by far the most expensive of all the materials, its cost being $13.00 against $3.42 for phosphoric acid, and $2.28 for potash, and while the potash and phosphoric acid, if added in excess, would be held by the soil with comparatively little loss, until it was used by succeeding crops, a large part of the nitrogen would sooner or later escape into the air, or be leached away by water, and thus be lost.

Indeed, when we consider how much of uncertainty there is in the present condition of our experimental knowledge of the ways in which plant-food is used in the soil, how different crops vary in their demands, and soils in their supply of fertilizing materials, and how large a part of the value of fertilizers is due to their indirect action in the soil, it is clear that any attempt to prescribe formulas to fit all cases, while it may, in some, prove most profitable, but must, in others, be very uneconomical. At the same time the method of preparing fertilizers by formulas based on the composition of the crops for which they are to be used, is a long step in advance of the practice which is in vogue among so many farmers, of using fertilizers at random. The fact is, as I have often urged, the only sure way to tell what fertilizers will be the most economical for given crops on a given soil, is by actual experiment.

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Ogden Farm Papers.—No. 81.

BY GEORGE E. WARING, JR.

The most important feature of the Centennial Exhibition, from the farmer's point of view, was the Cattle Show, which closed on the 4th of Oct. The amount of stock exhibited was not large, nor was it of a remarkably high *average* character. In my view, however, its value was enhanced by the marked difference in quality between the different specimens shown of almost every breed. There were Short-horns of enormous size with humps of fat loaded on to them until they looked to the inexperienced eye like huge animated masses of tallow,—animals to delight the soul of the Short-horn fancier, to arouse the astonishment of the uneducated citizen, and to awaken another emotion among those who, like myself, have been trained to appreciate the delicate and graceful beauty of the Jersey, the generous milking quality of the Ayrshire, and the suggestion of the meat and well-flavored roasting pieces of the less ponderous beefing breeds. I cannot pretend to do justice to this race of cattle, for my taste lies in quite an opposite direction to that of the Short-horn breeder—I can only repeat the assurances of those who are learned concerning them, that some of the animals shown were extremely worthy examples of the best breeding. Others were obviously inferior, fit to serve as a warning to the careless and ignorant who are not qualified by nature, and by purse, to embark in the breeding of these mountains of butcher's meat.

My opinion as to the quality of the Ayrshires, Herefords, Devons, and "miscellaneous" breeds shown, would not be worth writing, for I am not qualified to form an opinion. My attention was given almost exclusively to the Jerseys, (in which class I acted as a judge), which were gathered in quite unprecedented numbers, indeed there were more Jerseys present on the ground, if my count was correct, than there were of all other breeds put together. This preponderance was due to two causes; first, to the rapidly growing interest in this race of cattle, and second, to the well-directed efforts of the American Jersey Cattle Club to secure a full representation. The small returns received by dairymen for milk sent to cheese factories, and the more profitable manufacture of butter, are leading Northern dairymen to infuse an increasing proportion of Jersey blood into their herds, and the success that has attended the introduction of Jerseys into the Southern States, where more and more attention is being given to general farming to the exclusion of cotton growing, account sufficiently for the increasing appreciation of this remarkable race of butter producers. The Jersey Club, realizing the value of the opportunity to be afforded by the Centennial Exhibition, offered $1,000, in special prizes;—to be awarded by judges of its own selection, according to its own scale of points, $250 each was offered for the best cow and the best bull, and $100 each for the second best cow and bull; also $300 for the best herd to consist of one male and four females. The extent of the competition for these prizes was evidenced by the fact that thirteen herds were brought into the ring for examination, and that there were in all about 150 animals competing in the different classes. The uneveness of quality was certainly as marked in the exhibits of this breed as of any other. With instructions from the Exhibition authorities to make awards wherever sufficient merit was found, and with a disposition on our part to act with the greatest practicable liberality, we found it possible to recommend for award only about one third of the animals shown. We might have commended animals in many cases for beauty of appearance, or for fineness of bone, or for many other desirable qualities, and in this manner we could have easily doubled the number to receive awards, but we restricted ourselves by a resolution to commend no animal that did not promise more than ordinary dairy quality. However good a cow might be as an example of skillful *fancy* breeding, if she was not obviously a good *cow*, she was not to be ticketed as a model to be followed by having a Centennial medal and diploma hung to her horns.

Of course every exhibitor believed that he had attained a high degree of success, or he would not have exhibited,—no one certainly sent his herd to Philadelphia to be defeated. Many of them must have gone home sadder than they came, with the sadness that accompanies an increase of wisdom. It is easy, if one can pay the cost, to buy and breed a herd of registered Jersey cattle, but, as the result has shown, the elements of skill and judgment in breeding are more necessary than common. Indeed, to be entirely frank, I do not hesitate to say that with large facilities for examining specimens of this breed, I never saw before fifty such worthless brutes,—among registered animals,—as the tail fifty of this show; and the fifty next above them were by no means a high average lot.

Any visitor to the Exhibition, with the least capacity for forming a judgment, even if he learned nothing else, must have learned thoroughly well what to avoid. But he must also have learned very much else,—for there were twenty or thirty bulls and cows in the lot that could hardly be excelled. —typical animals, fairly glowing with the characteristic beauty and quality of this race. Our first task was an easy one—that of culling out the animals not to be commended,—but after the best had been selected for more careful examination, it became extremely difficult. The shades of merit were almost infinitesimal, and more than once the ranking was decided by a difference of less than one per cent in the scale of points. The judges were in every instance unanimous, and they were especially so in their appreciation of the difficulty of selecting the successful candidates for the Club prizes. There was no question as to making beauty yield to quality, but the quality was so evenly balanced that the judging became really embarrassing. The first prize for a cow was given to Sam. J. Sharpless's imported "Niobe," a grand fawn and white animal, eighteen years old, and still hearty and vigorous,—still breeding and milking regularly, and giving every indication of the very highest butter producing quality. She is the least "pretty" of all that were selected for commendation, but for all that she is an extremely taking animal to any connoisseur of the breed. The second prize was given to the same owner's imported "Cyrene," nine years old, a less robust cow than "Niobe," but fine, soft-haired, and of extremely yellow color. Like "Niobe," "Cyrene" has a generous proportion of white. The first prize for bulls was given to F. R. Starr, for his solid fawn "Litchfield," an animal shown in too fat condition, but with an obvious excellence of dairy quality, which no amount of over-feeding could conceal. The second prize went to H. J. Lothrop's "Bellini," a bull whose unmistakable good qualities were almost overshadowed by his remarkable beauty. He would be safe, to day, to carry off the first prize at nine-tenths of the agricultural shows of the country, and if more age gives him a deeper flank, he will stand a very good chance of sweeping the other tenth of the field. His only real defect is in the *white* of his horn.

When it came to awarding the herd prize, it seemed almost farcical to make the examination, which courtesy to the exhibitors required—Charles L. Sharpless was an easy first. Although he had not a first-prize animal in his herd, he had not one that was not in the "highly commended" class, and three of the five had been stout competitors for the Club's "firsts." No other herd had anything approaching such uniformity—excepting that some of them were uniformly bad. Almost perfectly good bulls were flanked by a harem of inferior cows, or cows of golden goodness were headed by a bull of very ordinary merit. It needed but a glance around the ring to see that "Chelten Duke," "Milkmaid," "Black Bess," "Tiberia," and "Lady Maud," offered a combination of quality in both sexes that was unapproached in the other herds. And while C. L. Sharpless's animals lacked the hair's breadth more that would have given them the individual prizes, the aggregate quality of the herd outstripped anything on the ground.

There were many other animals than those named above, which deserved more than passing notice, but the limit marked by the Club's prizes draws the easiest line at which to stop. The shortcomings which placed the best competitors of the prize animals just below them in the scale, were in the direction of indications of butter quality—a little thickness in the throat or cheek, an absence of yellow color in the horn, ear, or skin, a tendency to fatten while milking, a hard "touch," a fleshy udder, or some similar characteristic.

In making the judgments the Club's scale of points was found to answer its purpose remarkably well. This scale is arranged on the principle of giving the preponderance to those qualities which indicate large butter-producing capacity. It recognizes beauty, but does not permit it to over-shadow characteristics of more practical value; for example, in a scale counting 100 as perfection, a fine muzzle counts 2, the shape, color, and size of the horns, 3, and all items relating chiefly to beauty of appearance, count, in the aggregate, 17; on the other hand, a large deep-flanked body counts, (if perfect) 5, a good hind udder, 8, a good fore udder, 8, good and well placed teats, 8, good milk veins, 8, and a perfect escutcheon, 10. All of the qualities which relate especially to production, count, in the aggregate, 57. I think it is safe to say that not one of the judges at first sight thought of "Niobe" as a promising candidate for the first cow prize, and when she was measured by the scale, the first items, —relating to the head etc.—ran much below the same items in her competitor; but as we worked back toward her "business" characteristics, she came to the front with rapid strides, and the effect of the scale in this case was very decided, in placing in the front rank a cow which, judged by general appearance—as a show animal—would have fallen somewhat to the rear.

This exhibition of Jerseys was full of instruction for those who are considering the question of "solid color and black points." The best two cows have much white, the second best bull has some white, and the best bull has none. In the prize herd, the bull is broadly mapped with white, (over a golden skin), two of the cows are almost black, one a solid gray, and the other gray and white. Among the "highly commended" animals, a very large proportion, especially among the best, have considerable white, while in the remainder of the field the "fashionable" colors prevailed very generally. It is hardly necessary to say that the judges paid absolutely no attention to this color question, regarding it only as a fancy consideration which has nothing to do with the goodness or badness of the animal. The rejected animals were not rejected because of their color, but because they were not good animals. My own inference is, that their owners adopted, as a fundamental principle in their breeding, that they must have animals of uniform color in order to meet the demand of the highest priced market; and that their selection in purchasing was guided by this consideration, and not, as it should have been, by the more valuable characteristics of the Jerseys. One breeder with whom I expostulated for breeding with this as his chief aim, and to whom I endeavored to set forth the greater importance of the producing standard, replied: "That is all very well, but I can get fifty per cent more for a calf if of solid color."—Another breeder stated it as a principle not to sell a solid colored animal, and to fix a very low price, without regard to quality, on all having white markings. It is not the least of the good service that this exhibition has rendered to the Jersey interest, that the fatal effect of this sort of breeding has been so completely demonstrated by the comparison between herds which have grown up under the control of the color standard, and those where the useful and handsome *cow* standard has been the leading motive. It is safe to predict that if the present state of feeling on the part of the solid color men continues for ten years longer, the Jersey race will be divided into two distinct families, one valuable for ornamental purposes only, like deer, and another which, while retaining the characteristic beauty of the race, will show the wisdom with which it has been selected by an average butter producing capacity, exceeding anything that has yet been known.

W. B. Martin, of Roselle, N. J., who has just bought a bull calf from our herd, asks me to give in these papers my method of feeding, from the time dropped until one year old. I really can answer this question fairly only by saying that we feed exactly as we should for common stock. We try to have our calves fed on skimmed milk only, after they are six weeks old, but sometimes the change from fresh milk at this early age, leads to scouring, and the time has to be extended. After that time we give them only skimmed milk until they can be gradually brought to a full hay diet. If a calf needs extra feeding to bring it to a thrifty condition, we give it about a pint of oats a day, previously soaked in water. We avoid bran with calves, for fear of loosening their bowels too much, and we avoid corn-meal for fear of inducing a tendency to take on fat in the carcass. We even avoid giving the most nutritious hay, and this for two reasons; first, to prevent fattening, and, second, in order that the calf in satisfying his appetite, shall consume a large bulk of food, and so develope the capacity of his digestive apparatus, and create a permanent desire for large feeding, that will continue when the richer feeding of maturity becomes necessary. As a rule, we hold that the young Jersey should be "growthy," deep-flanked, and loose-jointed, and should have, generally, the characteristics which farmers know as "rangy."

New Agricultural Machinery.

Conspicuous amongst the wonderful display of agricultural machinery at the Centennial Exposition, were some newly introduced machines and implements which deserve more than a passing notice. Some of these, although attracting considerable attention for their novelty and obvious usefulness, have already made a standard favorable reputation for their successful application to work which has hitherto been done by hand, slowly and laboriously; or imperfectly by inferior methods. To recapitulate all that was exhibited worthy of notice would be utterly impossible here; we simply introduce to our readers in the engraving on the first page some of the machines which we consider as especially noticeable. First, there is the Hay Loader, (fig. 1,) which is not exactly a new machine, but it has been so much improved in its construction, that it may now be considered as perfect as may well be. This, Fousts' Hay-Loader, did its work so well on the experimental field at the Exhibition, as to receive the warm commendations of the judges, and more especially of the English judge, J. J. Coleman, Esq., the Agricultural Editor of the "London Field." This was high praise, as Mr. Coleman is an exacting and a competent judge of what is required in the hay field. This machine, which is made by Stratton & Co., Meadville, Pa., is a labor saver of no mean value.

The machine of perhaps the highest value in the harvest field, is the Reaper and Binder of Walter A. Wood & Co., (fig. 2.) To see this machine in operation is about as wonderful a thing as would be to see one of our present sewing machines for the first time. The grain is cut as by an ordinary reaper, but is carried by the apron to the binding table, seized by the revolving arms, compressed by the binder, bound and tied tightly with wire, and the sheaf is thrown to one side ready to be shocked. The binder is known as Locke's Binder, and has been under a course of perfecting for some time back. We do not see how any large farmer can undertake another harvest without this harvester and binder. It is in use in Europe, and we have favorable accounts of its action in Scotch, English, French, and German journals. It has been used the past season by the large grain growers of Kansas and Minnesota, whose fields cover thousands of acres, and by many other farmers elsewhere. We consider this the most conspicuous improvement on exhibition at Philadelphia.

More modest, but no less useful on the farm, especially to the root grower—and that should be every farmer—is the double Turnip and Root Drill of Messrs. Watson & Co., of Ayr, Ontario, Canada, (fig. 3.) To have one of these implements at a moderate price would remove much of the difficulty that stands in the way of root culture in this country; a culture that is more needed for an improved rotation of crops and a better agriculture generally than any other improvement. This machine is wholly of iron, and practically indestructible; it rolls the drills to a proper shape; crushes the clods; plows its furrows; drops the seed and covers and presses the surface over them, operating on two ridges at once. We have seen no other root-seed drill so acceptable in every way as this one.

A three-furrow iron-frame wheeled Gang-Plow, by the same makers, (Watson & Co.), shown at figure 4, is a peculiarly strong, light and serviceable plow. The use of gang-plows *must* become common in time, and it only requires that farmers get over a certain prejudice against them to bring them into general use on such soils and farms as are adapted for their use. We have seen four horses on a single plow turning one furrow. Four horses and one man can turn three furrows with this plow. By the use of the wheels, the plow having the shares raised, may be turned upon the headland without tearing up the surface, and a careful plowman may make as neat work with this plow as need be.

Each of these improved machines relate particularly to a special part of farm work, plowing, sowing and reaping. While there are many other machines and implements in the Agricultural Department at Philadelphia, that are worthy of the highest commendation, these seemed to us to be so novel and yet so useful, as to make them worthy of special notice, which is given here solely on their merits, without any request from, or any communication whatever with their manufacturers. Many other machines attracted our attention at Philadelphia, to which we may refer at a future time, when occasion may serve.

A Southern House Costing $2,500.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan of a simple, yet genteel Southern house, embraces ample interior accommodation for the wants of a good sized family. It has an abundance of outside verandas, and artificial shade, and may be constructed at a very moderate cost.... **Exterior,** (fig 1.)—The style is adapted to the Middle and Southern States, because of its elevation and airiness, the overhanging projections of its roof, and the facility with which wings, or verandas, may be added. The Tower is a conspicuous feature, and though without any special ornamentation, it gives an expression of unity and completeness to the whole structure. The Verandas on every side afford protection from the sun. Many persons prefer disconnected verandas, (as shown in figs. 1 and 3,) with open ends to the roofs for the escape of the heated air that would otherwise be retained in them. Moreover disconnected verandas prevent the annoyance arising from the noise made by children who are fond of running and playing upon them.

....**Cellar.** (fig. 2.)—This is under the kitchen wing only—is 6½ feet deep, has two windows, an outside entrance with stone steps, and a stair-way leading to the rear entry of the first floor.... **First Story,** (fig. 3.)—Hight of ceiling in the main house 11 feet, and in the wing 9 feet. The entrance Hall, nearly square, and entered from the front piazza through double doors, contains the main Stairs, and communicates with the parlor and dining-room. Each of these apartments communicates with the library through large sliding-doors. The Windows to these rooms open to the floor, and are protected on the outside by the verandas. The front parlor window is 6½ feet wide, with the sashes arranged to slide in pockets at either side, by which means the parlor is apparently prolonged to, and may be used with the veranda. Each of the large rooms has fire-places and marble-mantles. The Closet for the dining-room is under the main stairs. The KITCHEN is in the rear wing, and separated from the main house by the rear lobby and the pantry; it has a good sized double window at each side, a large pantry and a fire-place. In the rear entry are stair-ways leading to the second story, and to the cellar.... **Second Story,** (fig. 4.)—Hight of ceilings in main house 9 feet, and in the wing 7 feet. It is divided into six chambers, besides halls and closets. The three larger chambers have fire-places with marble shelves, and two windows in each. The window in the small chamber is placed near the ceiling, above the kitchen roof. The two chambers in the wing are intended as servants rooms, and have no communication with the main house.... *Tower* and *Attic.*—The Tower has an inclosed stair-way with a door at the foot. The main roof finish at the rear of the tower, is leveled even with the main ridge, inclosing the intervening space—this affords room for a door leading from the tower to the attic. This story is thoroughly floored, and has small windows in each gable, and is useful as a place for storage. In cases of necessity a portion of this attic may be used for bedrooms.... **Construction.**—The Cellar excavations are made in the ground 4½ feet deep, and for the underpinning of the main house 1 foot. The loose earth is used in grading, raising the surface immediately surrounding the foundations 8 inches. The foundation walls are 8 inches thick, of hard brick and good mortar. The cellar walls are 6½ feet high, and the underpinning 3 feet 2 in. high, leaving an exposed surface 18 inches high at completion. Only the portions of the foundation plan, shown darker in the plan, fig. 2, are walled, the intervening spaces being left open for the free circulation of air. The general character of the materials to be used in the construction of this house, (a large portion of which is milled, and manufactured ready for use), may be inferred from the appended estimate. The manner of putting these materials together is of great importance, and should be entrusted only to skillful and thorough workmen. The details of the exterior finish are so plain, that the work of "getting out" the several parts may be done by the mechanics when building, without recourse to the scroll saw or carver. The truss work of the cornices, and the open frame work, and columns of the verandas, are of dressed timber, neatly fitted, and stop chamfered. All the roofs have sufficient pitch to allow the use of shingles, which are much lighter and cooler than slate or metal. Veranda roofs so constructed do not reflect so much heat into the chamber windows as others, which is important in a warm climate. *Ventilation.*—Large window openings, with easy working sashes, are provided, and afford the best means of changing the air of any apartment. The chimneys are large, and have open fire-places, and ventilating side flues with registers near the ceilings. These openings, which should never be closed, will be found to afford sufficient ventilation. During seasons of extreme heat, the tower may be made to serve as a general ventilator, by lowering the upper sashes, and opening all the doors leading to it. The following estimate includes everything necessary to complete this building, in a thorough manner, at prices now ruling in the vicinity of New York.

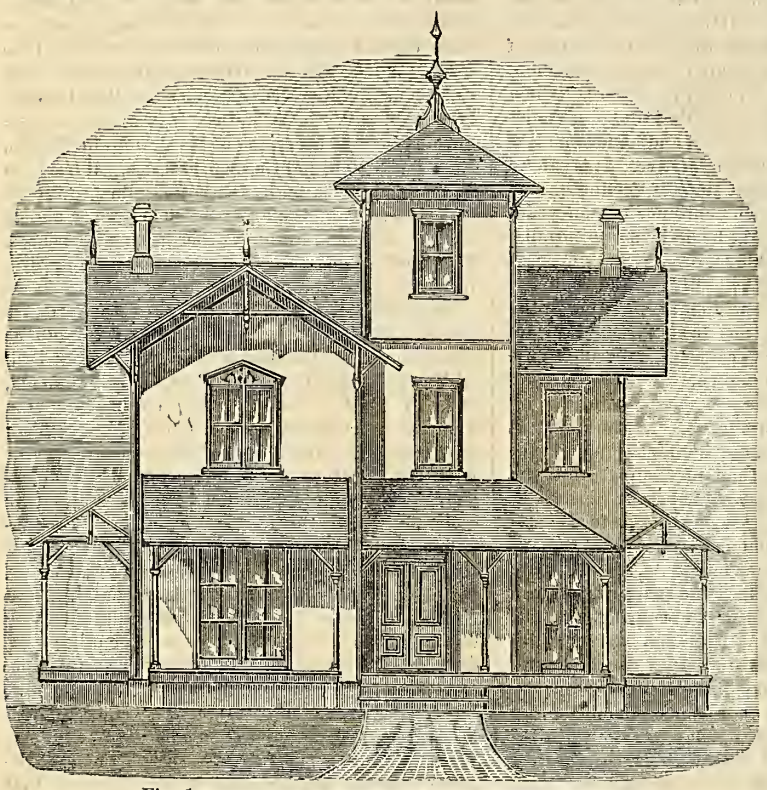


Fig. 1.—VIEW OF EXTERIOR OF A SOUTHERN HOUSE.

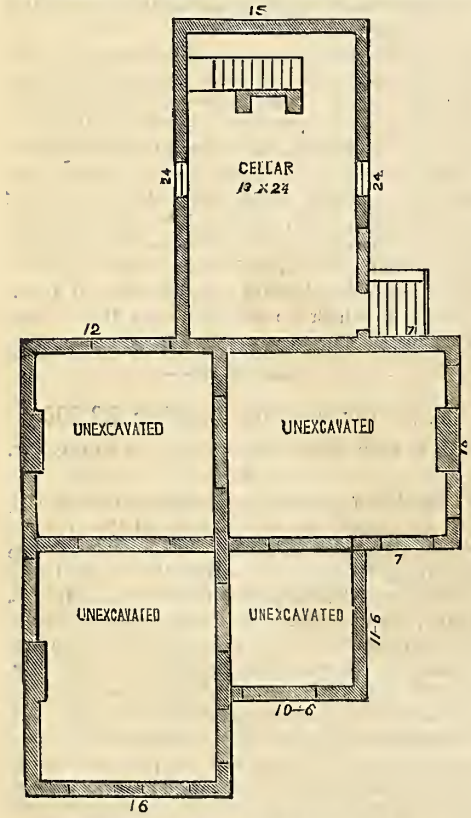


Fig. 2.—CELLAR AND GROUND PLAN.

Estimate:

61 yards Excavation, @ 25c. per yard	$ 15.25
15,000 Bricks furnished and laid, @ $12 ⅌ 1,000	180.00
26 feet Stone Steps and Sills, @ 30. per foot	7.80

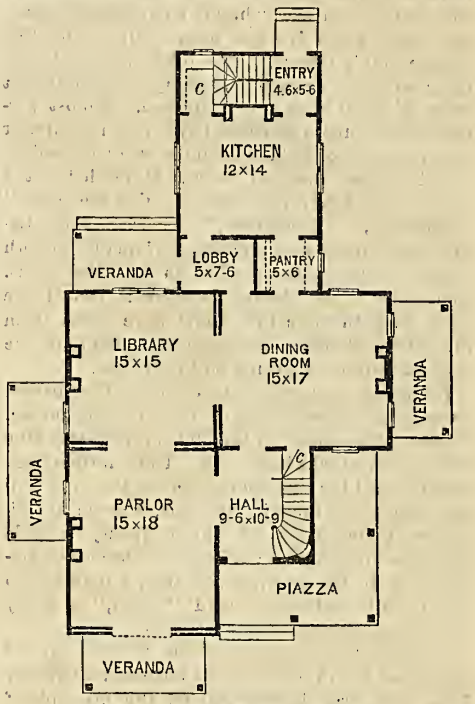


Fig. 3.—PLAN OF FIRST FLOOR.

700 yards Plastering, @ 35c. per yard	245.00
6,112 feet Timber, @ 2c. per ft.	122.24
viz. Sills, 4x8 in.x217 ft. long. 78 Beams, 2x8 in.x.6 ft. long. 1 Tie, 4x6 in.x247 ft. long. 34 Beams, 2x8 in.x15 ft. long. 1 Plate, 4x6 in.x 247 ft. lg. 39 Beams, 2x7 in.x16 ft. long. 7 Posts, 4x7 in.x22 ft. long. 15 Beams, 2x7 in. x 11 ft. long. 4 Posts, 4x7 in. x 34 ft. lg. 1 Piazza, 2x7 in. x375 ft. lg. 1 Ridge, 2x7 in x 4 ft. long. 2 Valleys, 3x8 in. x 16 ft. long. 1 Ridge, 2x7 in.x30 ft. long.	
100 Joist, 3x4 in. x13 ft. long, @ 16c. each	16.00
400 Wall Strips, 2x4 in x 3 ft. long, @ 13c. each	5 .00
420 Siding (6½-inch wide, x 13 ft. long, @ 26c. each	109.20
Materials in Cornices and Verandas	40.00
120 Hemlock Boards, (for main house,) @ 15c. each	18.00
236 Pine Boards for roofing, 4½x13, @ 18c. each	42.48
67 bunches Shingles, @ $2 ⅌ bunch	134.00
Finial on Tower	8.00
Flooring for Verandas (4½ inches wide) @ 20c. each	33.60
360 Flooring for inside (9½ inches wide) at 26c. each	93.60

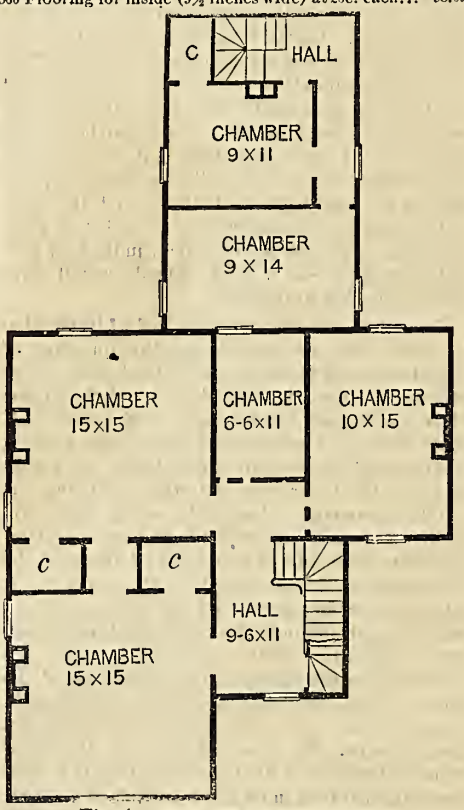


Fig. 4.—PLAN OF SECOND FLOOR.

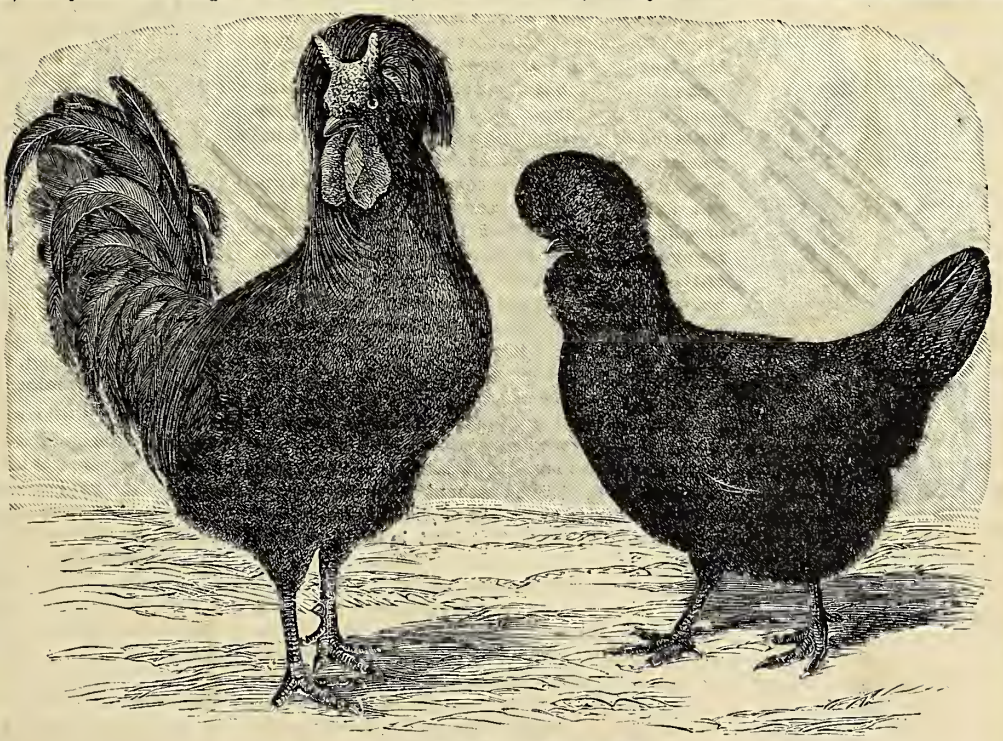
Stairs, $90; Closet finish, $20.00	110.00
2 Cellar Windows, complete, @ $6 each	12.00
28 Windows, @ $10, $280; 32 Doors, @ $10, $320	600.00
3 Mantles, $25; 3 Shelves, $6	93.00
224 feet Gutters and Leaders, @ 8c. ⅌ ft.	17.92
Nails, $22.00; Painting, $175; Carting, $25	222.00
Carpenter's labor not included above	250.00
Incidentals	77.91
Total Cost, complete	$2,500.00

The French Breeds of Poultry.

If profit is the chief end of poultry keeping, and this is certainly the purpose for which farmers and those who raise poultry for the market, as well as those who compete for prizes at the poultry shows, are all in pursuit of, then the French breeds of fowls are worthy of high consideration. There is no other country in the world where poultry is so popular a product in the market, or so frequent a dish upon the tables as in France, and a breed that is in favor there must possess positive merit. In addition to the vast number of eggs which are consumed in every possible shape in cookery, and in various arts, millions of dollars worth are exported from France every year, and the *poulet*, variously presented, is not only a very conspicuous item on the bills of fare, but its delicacy and succulence entitle it to the prominence it there enjoys. That it is acceptable in France should be to a breed a passport to popular favor everywhere. Yet the French fowls are not nearly so popular in America as they deserve to be. We confess we never could banish the light Brahma from our yard to replace it with either the Houdan or the Crevecœur, but this is rather for its friendly, amiable disposition, and its excellent, and fairly plentiful eggs, especially in winter, rather than for the quality of its flesh; for a Brahma is inclined to be "scrawny" in its youth, and yellow and tough in its age, and not particularly toothsome at any period of its life; while the Houdans and the Crevecœurs are both prolific egg producers, grow rapidly, and possess white and juicy flesh. Yet we have admired these fowls in the yards of other people, and have listened favorably to frequent praise of their profit and their beauty. The Houdan is doubtless a very handsome and attractive bird, and a flock of them, well bred and well cared for, is very showy in the yard or the field. They are square and massive about the body, with short legs, a spirited or even a fierce carriage, on account of their peculiar crest, beard and muffling, and the lively markings of their plumage; which, when perfect, is of a mixed "pebbly" black and white. They have the fifth toe, a useless, objectionable member, which they inherit from the Dorking strain in their ancestry, although along with it they have the fine flavored flesh and plump breast of that race. Their legs are gray and their bones remarkably light. They are egg producers rather than breeders, and if properly fed, the hens will lay on without stopping to "sit." They will thrive in confinement, when properly kept, as well as when roaming at large, and when allowed to range, exercise the liberty now and then with greater freedom than is convenient upon the farm. The standard of excellence of the poultry fanciers for the Houdan is subject to some variation as to minor points, such as the shape of the comb; the fifth toe, however, is insisted upon; the feathering should be of black and white, evenly mixed, and not patchy; the saddle of the cock is tipped with straw yellow; the crest is of black and white feathers, evenly mixed, and thrown back so as to show the comb, which is double, evenly toothed upon each side, and with both sides alike in shape; the hackle is black and white, the beard and muffle almost hide the face, and the wattles are long and evenly rounded at the ends. The hen is square bodied, and low framed, with plumage like that of the cock; the crest is full and round and not loose and straggling or shaggy. The fifth claw is large and turned upwards, as with the cock. If good birds are procured to start with, they should breed very true to the marks, but if long closely bred they will in time become mixed in appearance.

A PAIR OF HOUDAN FOWLS.

The Crevecœur, like the Houdan, is named from the village in France, in the neighborhood of which it has long been largely bred for market. These birds are remarkably stately and handsome, although sombre in color, except in the sunlight, when the golden green reflections from the plumage make them very brilliant, but this peculiarity is only brought out in a favorable light. They are much more rarely seen than the Houdans, although as producers of eggs, and for non-sitting, as well as for early maturity, and whiteness, and sweetness of flesh, they surpass these. They are not winter layers, which is an objection, but when the cock is crossed upon Brahma hens, the eggs produce table birds of heavy weight, excellent quality, and in time for early marketing. They suffer nothing from confinement, and a dozen can be easily kept in a yard of 20 feet square. They are very tame and friendly when petted. They excel as table birds, notwithstanding their black legs, which, however they may be objected to by the market men or the cooks, have no ill effect upon the color, flavor, or tenderness, of the flesh, which is very white and of delicious flavor. Young birds will fatten when 3 months old, and have been made to weigh 4 pounds at that age, and at 6 months, with two weeks fattening, have weighed 7 pounds. The Crevecœur cock should be a heavy, compact bird, mounted upon short, thick legs; the thighs being well feathered, tend to give the birds a heavier and more solid build. The back is broad and flat, giving a robustness to the figure, and slopes but slightly towards the tail, which is carried high. The general carriage is dignified, their sedateness being somewhat hightened by their sombre coloring. The comb is two-horned or "antlered," and the crest is formed of lancelet shaped feathers which fall backwards and do not straggle wildly in all directions as in the Houdan. The chicks are hardy when properly cared for, but early chicks of this breed are rare, on account of the late habits of the hen. The breast is full; the hackle is long and sweeps gracefully down the neck; the beard and muffle are full and low on the throat, and the plumage, as previously described, when perfect, is of a solid black with greenish and sometimes bril-



A CREVECŒUR COCK AND HEN.

liant reflections. The hen is similar in color and special points to the cock; her body is massive, and her legs strong to match her stout body. Her plumage is perfectly black, the crest is large, and the beard full and profuse, and the comb, which is horned, is much hidden in the crest. As these birds become aged a few stray white feathers will appear in the crest, which, however, should be an objection in young birds. When but one breed is kept, the Houdan would be preferable to the Crevecœur, on account of its more lively color, but were cross-bred birds are not objected to, a few of the latter with their remarkably beautiful color, when in a bright light, their large size and handsome carriage; their desirable table qualities, and the habit of the hen to lay when all others are broody, would make a very desirable addition to a flock of light Brahmas, or white Cochins. Black fowls do not seem to become popular very readily, just as black breeds of cattle have few admirers, in spite of their many claims on the grazier and the butcher, but if any black fowl is to be chosen, we would certainly give the preference to the Crevecœur. The illustrations given on the preceding page are portraits from life, of prize taking birds, and although there are differences of opinion amongst fanciers as to the value of certain points of questionable merit, intrinsically, yet the birds here represented are as near perfection as any than can easily be procured.

Among the Farmers.—No. 10.

BY ONE OF THEM.

Potatoes not worth Digging.

I believe the fact, which this year stares us in the face on every hand, that potatoes in good soil and under good culture have actually dried up without producing anything worth digging, and in many cases nothing at all, is absolutely without a parallel in this latitude. It is quite true that the plants were in some cases set back by the Colorado beetle, but the failure of the crop, except in a few cases of absolute neglect, or ignorance of the best methods of destroying the pest, is due to the hot, dry weather. We have been getting careless about

Early Planting

potatoes of late years. It used to be an almost universal feeling that early potatoes must be planted just as soon as the ground could be worked. It was necessary, too, for the earlier we had our potatoes in the market, the better the price we received, but now-a-days the competition with Bermuda, Norfolk, and other Southern ports is such, that New Jersey and Long Island potatoes hardly have a show. This year indeed the price at which early potatoes were sold was high, yet this was simply on account of scarcity. The fine piece of potatoes, which really bore off the palm in our whole neighborhood, was superior simply because it was planted early, and well tilled. The plants were well established before the beetles became troublesome; no Paris green was used; the insects were hand-picked by the old farmer and his grandsons, and before the drouth became severe, a fine crop of Early Rose was safe, if not secured. Of course, it was not a large crop. The drouth hurried the ripening of both tubers and plants, and so essentially diminished the yield. Early planting alone will not, however, insure a crop of even Early Rose. I think that

Deep Planting of Potatoes

is nearly as important. If the soil be reasonably deep and mellow, the seed may be placed *six* inches deep, though I would not advise or direct that it should be planted more than five, for this would accomplish the setting of the seed probably at something over four inches deep. This depth is usually about right, yet in sandy land six inches is none too much. I believe that, if the early potatoes in this parched region had been planted in March, as they might have been, and four inches deep, we would have had three-quarters of a crop, and probably more. It is important to remember, a fact impressed upon my own mind by a most unfortunate circumstance, that it will not do to be sparing of seed in planting early, for the cold moist soil often causes potatoes to decay, especially if they be planted cut in small pieces. It is almost equally necessary that the pieces, though large, be cut several days before planting, that they may become dry, and the cut surface protected by a dry, gummy film of which exude.

City Stable Manure.

The failure of the potato crop places the farmers and gardeners, who have been using city manure, in a far worse position, than that in which they began the season. Many of them were in arrears for last year's payments, yet they were trusted again for the manure necessary to make their early potato and early cabbage crops, which are ordinarily the first crops to bring in much money. Of course they can not pay for it, and the city manure is offered at very low prices, and sale for a good deal of it is absolutely lost. The prices which Long Island farmers have been in the habit of paying, do not seem to be too great, certainly they have not been greater than the sharp demand for it warranted. When we have had favorable seasons for potatoes or for cabbages, the debt was easily cancelled before the close of the season, but the failure of one or two crops seems to have seriously disturbed the trade, and this excellent manure is offered this fall at such low prices, that a permanent deflection of the fertilizer from Long Island may result through other farmers learning about it, and providing for its transportation. It consists of horse-dung shaken out nearly clean from the straw and other bedding, and kept free from moisture, or packed in pits, where only the liquids from the stable flow. Sometimes it becomes heated, and more or less moldy and fire-fanged, and occasionally it is very light and dry; but usually it is in good condition, and as city horses are generally well fed, it is of excellent quality. I recently visited a farm where it is used, and was surprised to find it esteemed as fully equal to good mixed manure from the barn-yard.

Horseback Riding.

Where we have so many horses, and for a considerable part of the year such poor roads, it seems remarkable that we do not ride more. Our people prefer to drag through the mud and over rough roads in buggies or phaetons. Even of country-bred boys and girls more than half can not sit a horse with grace, comfort, or safety, and as to city-bred youths, some are sent to riding-school, and make fair riders, but never practice it, while a few —not one in a hundred of these—enjoy a gallop through the park before breakfast, or in the afternoon, once in six months. Can it be that the general sentiment of the community, which is opposed to a horse going in any other gait than a trot or walk, has had the effect to cause us to forego riding? The increase of lung diseases, weakness of the spine, catarrh, etc., among men of sedentary pursuits, may perhaps in a measure be accounted for by the giving up of this exercise.

The fact that a driving-horse is an easy, pleasant, well trained saddle-horse, unless, indeed, he be only used as a saddle-nag, does not add a penny to his market value, indicates how little we ride. Horse-dealers never know whether or not a horse is an easy gaited one under saddle, and if he will carry a man on his back without making a disturbance, or trying to throw him off, he is recommended as "broken to saddle," at least in the New York market.

An Arabian Nag.

A year or two ago a friend, a city bred man, spent the summer with us, for the sake of enjoying the society of an Arabian mare, which he picked up at an auction sale at a bargain. The mare was sent to the farm, and before long he came too, and became an established member of our household for the season. The mare was as white as snow, with silky mane and tail as fine as a lady's hair. Her gait was an easy canter, or a free trot, and she had an intelligence which was almost human. It was not long before she had been ridden over almost every road in the vicinity. Our friend's morning canter ended at the railway station, where he and I took the cars for New York, in order that the mare might be led home. One day she was, by mistake, not fastened to the wagon, but nevertheless plodded on behind as piously as if she had been tied, though often a rod or two behind. This was afterwards repeated, and suggested the idea of turning her loose at other stations to come home alone, which, after that, she did with precision. A card was attached to the saddle pummel—"Let her alone and she'll go home"—and so she did from every railway and steamboat station within six or eight miles.

I sometimes wonder that the example has not been followed, for the mare was well known throughout this region, and this convenient habit commented upon. It was no taught trick, but depended simply upon the mare's common sense. She was 15 years old, and past the day of learning new tricks easily. I think almost any horse might be taught to go directly home. All that would be necessary would be to watch him for a few times, and give him a lump of sugar after he got home, and a mild chastisement if he was found loitering on the road. Of course his head should be well checked up, to prevent nibbling shrubs or grass. Riding for pleasure only, I greatly enjoy, but it is riding for *use* or profit which I would commend to farmers and gentlemen living in the country. It is many years since I have taken a pleasure ride, and yet I should feel lost without a good saddle horse; and so far as my experience goes, the fact that a horse is good for all work in harness, does not affect his being pleasant under saddle, nor does his use in this way affect his driving at ordinary gaits.

A Cuban Saddle-Horse.

The Cuban gentlemen, and perhaps equally those of other Spanish-American States, appreciate a good saddle-horse. There is one owned in this county, a stallion, but well broken, intelligent, and kind. He was seen and ridden in Cuba by his owner, who has a weakness for a fine horse, so he soon became his property. With the style of an Arabian, he has the coat and color of the Barb—a skin like satin, of a dark glossy bay, inclining to brown, covered with fine white spots and speckles, each clearly defined, as if he had been out in a snow-storm, no spot being larger than a bean, and none smaller than a kernel of wheat. At a distance of 100 yards none of the spots show, and he looks like a bay horse. Beautiful and curious as is his appearance, his gait is still more interesting. Apparently it is a rapid trot, executed by moving both fore and hind feet independently of each other, and so that but one foot is lifted at a time. The effect of this is to gain the smoothest movement possible to imagine. I think a glass of water nearly full might be carried by the rider without spilling a drop. The speed is fully equal to that of a smart trot, and of course it is easy and delightful. It is strange that we have no familiar English name for the gait, which is said to be natural to the Spanish horse, as to the Spanish-American ponies, which are for the greater part directly descended from Spanish and Barb stock. Nevertheless, to exhibit the gait in perfection, the horse undergoes severe training, and his value is greatly increased thereby.

Cider and Vinegar.

The dry weather has caused many apples to fall, which otherwise would have held on—though more or less wormy. Some were ripe enough to make fair cider for vinegar, others too green, but still worth pressing for the same purpose. That was before the ripening of fall pippins and other good cider apples, for when well treated, Fall Pippin cider is excellent, though not to be compared with that from Newtown Pippins. One reason may be that the weather in September and early October is not so favorable to the fermentation as that of late October and November. The high winds, which it is fair to look for as autumn weather comes on, will shake off the apples more than usual, I fear, and great quantities of poor cider and flavorless vinegar will be the result. The better the cider the finer the vinegar always.

I was greatly amused by Dr. Hexamer's account of the difficulty he encountered in getting his superb cider entered and exhibited at "the Centennial." It was entered properly early in the

spring, and the printed rules required that it should be delivered, with other things, before the 10th of May. So the Doctor was "on hand" of course. He was informed that his other exhibits were in order, but that the cider could not be shown before autumn. "Why not?" said he.—"The special exhibition of cider-presses takes place then, and besides it is of no object at this time o'year."—"But," said the Doctor, "you show wine now, do you not?"—"Certainly—age improves wine."—"Then," said he, "my exhibit is *Apple wine*, for it is not fit to drink until it is a year old, and that which I have to show is some of it several years old in the barrels."—"Ah," said the wise official, "if you have apple wine it is all right, *that* of course may be shown now."

This official was not more ignorant of what cider is, than most of his countrymen. Here in this land of apples, in almost endless variety, and of unsurpassed excellence, the abundance of which is only equaled by the profusion of other fruits of the earth, we know cider only as a beverage enjoyable before fermentation is fairly over, and good for nothing but vinegar and apple-jack after it becomes "hard." There are few kinds of imported wines that equal this

Apple-Wine

of Dr. Hexamer. He has never told me, that I remember, the method by which it is made, and its fermentation regulated and perfected, without the loss of flavor, or gaining of false flavors. I have little doubt that he selects sound ripe apples, mingling varieties only when he knows they go well together, using no decayed fruit. Laying up his cheese in press cloths and not straw; using no water to wet the cloths, or the straw if he uses it; that he exposes the ground apples to the air more or less, stirring the mash frequently to give it a good color; that he uses pure, clean sherry or brandy barrels, if possible not previously used for cider; that he allows as little access of air as possible to the cider during the pressing or afterwards; that the cider is racked from one barrel into another, just as soon as the first fermentation is fairly over; that it is kept in the coolest part of the cellar all the time, in order that the fermentation shall go on quietly and thoroughly, the barrels being kept full, and no air being allowed to come in contact with the cider. The barrels are probably racked off three times before spring, and again at the beginning of warm weather, (apple-blossom time, when the cider works from "sympathy"). The cider I allude to is "still," that is, not sparkling or effervescing when bottled, as it may be.

The Angora Goat.

BY R. PETERS, ESQ., ATLANTA, GA.

Continued from last month, page 373.

VALUE OF THE FLEECE.—The market value of mohair, like all other commercial commodities, may be expected to fluctuate in accordance with the laws of supply and demand. But as the production is now, and for many years must continue to be unequal to the demand, prices must remain at, or approximate those now current. In the meantime improvement may reasonably be expected in the yield, the quality, and its preparation for market, at an inappreciable increase of cost. I have already quoted it at from 60 cents to one dollar per pound. But the shrinkage in all values within the last twelve months, has affected "mohair" also. As to present [August] prices the following returns of a small shipment to the Jamestown, N. Y., Manufacturing Comp'y are respectfully presented:

JAMESTOWN ALPACA MILLS,
Jamestown, N. Y., July 18th, 1876.
RICHARD PETERS, Atlanta, Ga.,
Sold to HALL & TURNER,
(Mohairs, Alpacas, Poplins and Worsteds.)

124 lbs. 1st quality Mohair	@ 75c		$138.00
55 lbs. 2d do.	do.	@ 60c	33.00
10 lbs. 3d do.	do.	@ 55c	5.50
7 lbs. black	do.	@ 55c	3.85
43 lbs. ½-grade	do.	@ 20c	8.60

USES OF ANGORA GOAT PRODUCTS.—"Mohair," the commercial name of the fleece of the Angora Goat, is used for the manufactures of which wool may form a part—but its length, great strength, and silkiness of fiber, and its beautiful luster, and the fact that it readily receives dyes, which, once set, are indelible, gives it a higher market value, accompanied by a rapidly increasing demand. It is manufactured principally into poplins and alpaca goods, that are known as mohair goods, and into plushes and braids.

In California and other of the Pacific States, large flocks of grade Angoras are being bred for their skins, for which there is an increasing demand at San Jose, California, by the Angora Robe, Glove and Mat Manufactory. The carcass is highly prized, wherever introduced, as food, while the milk is highly esteemed for domestic use and the sick room. Taken altogether, the Angora may be regarded as a very valuable acquisition, and an addition to the resources of our husbandry—especially in the Middle, South Atlantic, Western, and Pacific States. The great hardiness and beauty of the animal, its almost entire freedom from disease, its self-sustaining qualities, and the rapidity with which it multiplies itself and grows, must make it a universal favorite.

CAN IT BE CROSSED WITH SHEEP?—Prior to the year 1860 I tried many experiments, in hopes of obtaining a cross between the goat and sheep, and failed in every instance. Extensive correspondence with other breeders has convinced me that the cross cannot be obtained. Dr. John Bachman, the celebrated Naturalist of Charleston, S. C., who was in correspondence with the most distinguished naturalists of Europe, informed me that he had no faith in the theory, and did not believe the cross obtainable. He stated, however, that Cuvier, the renowned French Naturalist, claimed to have examined a specimen of such a hybrid, but Dr. Bachman himself believed that Cuvier had been deceived, or had made a mistake.

INTRODUCTION INTO CALIFORNIA.—In the spring of 1861 I shipped, by Adams Express, to St. Louis, two 16-months'-old bucks to Mr. Wm. M. Landrum, then of Joaquin Co., California, who, at the ensuing State Fair, in September, received a special premium for the introduction of the Angora, or "Cashmere" Goat—a large size silver goblet. From St. Louis they were transported by steamer to Fort Leavenworth. Thence they traveled on foot with the wagon train, browsing on what was rejected by other animals, and arrived uninjured, and in good condition, at their new home. One died of snake-bite after siring about thirty kids. The other, widely and popularly known on the Pacific Coast as "Billy Atlanta," (and "King of the Cashmere Goats,) lived to be ten years old, (when he was accidentally killed,) and sired about 2,000 kids. This buck won the sweepstake prize, against all competition, at every fair down to that preceding his death; his numerous descendants are scattered all along the Pacific Coast, and his blood courses in the veins of over one-half the Angora flock, pure-bred and grades, in that part of the Union, estimated to approximate 70,000 head.

In Nov., 1867, Mr. Landrum imported eight head, and these were followed in Dec., by seven imported by Gray & Gilmore; and these by three imported by Mr. Flint. In 1868 Gray & Gilmore imported seven more, and Messrs. Landrum, Butterfield & Son imported two bucks—one of which was the celebrated no-horned Costamboul already mentioned. Soon after, in the same year, (1868,) I sent out 25 head of choice pure-bred goats by Mr. E. Holland, of Atlanta, 17 of which were bought by Landrum, Butterfield & Son, and the other eight by various parties in California.

In 1870 Diehl & Brown shipped out most of their stock, 60 of which survived, and passed into the hands of Butterfield & Son. In 1871–72, Shearland & Thomas imported the larger portion of the Eutychides flock, and in 1872 Landrum & Rogers bought the larger portion of my pure-bred stock. Thus it will be observed that about one-third of the pure-breds introduced into California, was contributed from the first and original (Davis) importation of 1848; and that its blood is present in probably two-thirds or three-fourths of the Angora stock on the Pacific Coast.

SUGGESTIONS AS TO FUTURE IMPORTATIONS.—As already intimated, the importation of Asiatic Goats has been promiscuous, and in many cases from chance lots of ill-bred, ill assorted stock. Few have been imported direct from their native mountain country; the greater portion having been purchased near the coast by persons unacquainted with the business, and more interested in speculation, than regard for, or a desire to improve the stock. Mr. John M. Harris, of California, is an exception, he having, last year, visited both Cashmere and Angora, and after observation and inquiry, decided in favor of the last named as the best adapted to this country. He purchased and imported two bucks and ten ewes, (all yearlings,) which, with their increase on the way, cost him at the time of landing over five hundred dollars each.

To obtain the finest specimens of pure-bred Angoras, I am clearly of opinion that some experienced breeder should go direct to the native home of the goat and remain one or more years, select and breed there, and thus by securing an improved stock, obtain animals which would be a decided improvement on many of the previous importations, and prove a really valuable addition to our Angora stock.

THE GOAT OF THIBET, THE TRUE CASHMERE.—The name "Cashmere" is derived from that of the city where the far-famed Cashmere shawl is made, but the wool entering into its manufacture is obtained from the *undercoat* of the Goat of Thibet—the home of which goat is among and between the principal and secondary ranges of the Himalayas, near the regions of perpetual snow, from 10,000 to 22,000 feet above the ocean, distant northwesterly about 1,500 miles from Calcutta, and 2,500 miles east of Angora.

Dr. Davis brought with him from Asia, in 1848, besides the Angoras, a pair of Thibet Goats. The male died soon after his arrival in this country. The female was smaller than Angoras, narrow in the chest, with fox-ears, and rather short, upright, spiral horns. She had an undercoat of downy wool, and an overcoat of white hair about four inches long. This undercoat is combed out by the natives as it starts to shed in the spring, and is used by them in the manufacture of the Cashmere shawls.

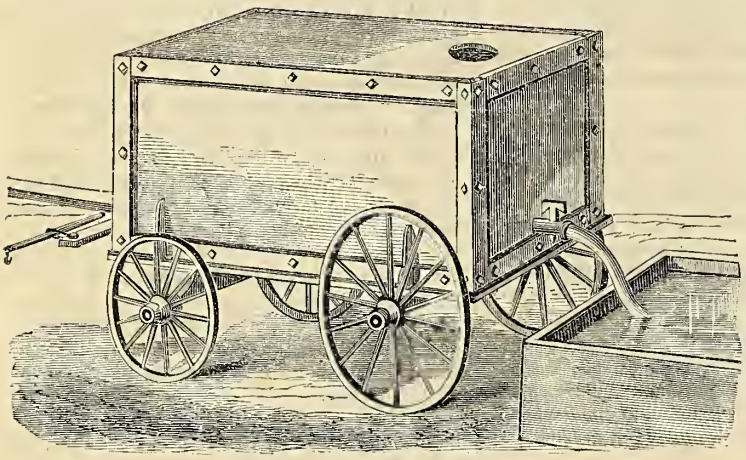
In 1859 I bought a male Thibet Goat, and three females having the appearance of being half Thibet and half Angora. The Thibet male bore a strong resemblance to the Thibet female imported by Dr. Davis. I combed out his undercoat of wool early in April, 1859, but could make no practical use of it.

In 1854, when about to invest in Thibet and Angora Goats, I was advised by Dr. Bachman not to purchase the Thibet Goats, but to rely on the Angoras, as, in his opinion, the Thibet Goats, like the Llamas of the Andes, could not be successfully acclimated in a locality under 10,000 feet above the ocean. His opinion proved to be correct in my case, as all the Thibet Goats in my flock, pure and graded, died in a few years after I purchased them, from a disease of the lungs combined with dysentery, and I have heard of no one having been successful in the United States east of the Rocky Mountains, with the Thibets or Llamas. I am inclined to believe, however, that with care and attention, both can be acclimated and profitably bred on the elevated plateaus of California, Colorado, and New Mexico, and perhaps other portions of that highly favored portion of the Union.

Water-Carts.

The regular distribution of water to stock in the yards and fields, should never be neglected, and where there is not an ample supply from wells, water should be carried to the stock. To drive the stock to water will often be more trouble than to carry water to them, and a convenient method of doing this is by means of a tank, holding 500 to 600 gallons, mounted upon a wagon-frame. One that we have seen in use was made of two-inch pine plank, jointed and strengthened at the corners by cleats, and held together by iron rods with broad heads at one end, and screw nuts at the other. The seams were calked to make them water tight. The box was about 8 feet long, 4 feet deep, and 3 feet

wide. A large faucet was fitted at one end, and a short piece of hose was fixed to this, to convey the water to the drinking troughs. For milk cows pasturing in a field not supplied with water in any other manner, it would be found of great benefit to stir into the water a few shovelfuls of bran or middlings. The shaking of the wagon would keep the mixture well stirred, and this addition to the water would not only make it more palatable, and lead to a greater consumption of it, but it would supply additional nutriment of the most valuable and desirable character for producing milk. In serving out this drink none of the stock should be neglected, but cows, calves, horses, sheep, hogs, and poultry, should always have a regular supply. It makes work, certainly, but our principle in farming is to make as much work as we can, provided the work is profitable, and no work upon the farm can be made more profitable than caring well for the health and comfort of the stock. This it is that produces milk, butter, beef, pork, wool, and mutton; and these we have found to be the most satisfactory money yielding products of the farm.



CART FOR CARRYING WATER.

How to Make a Fishing Scow.

The fishing season is over, but the fishing season is not the time to make preparations for it. These, such as boat-building, should be done during the winter, when indoor work is more agreeable, and leisure is more ample, than in the summer. A boy who can handle tools, may make a very handsome boat or scow, such as is shown at figure 1, at a cost of five dollars or less, in the following manner. Procure five three-quarter or half-inch clear pine boards, 12 feet in length, and 8 inches wide; four boards 10 feet long, 1 inch thick, and 1 foot wide, and three strips 10 feet long, 1½-inch thick, and three inches wide. Plane all these smoothly on both sides, and have them all free from loose knots or shakes. Cut two of the 1-inch boards into the shape shown at figure 2, for side boards, sloping each end to a straight line for two feet, and then slightly rounding the middle of the board as shown. Cut two pieces of the 1½-inch strips into lengths of 2 feet 10 inches, and nail them to the ends of the side-boards as shown at fig. 3. If strips of soft brown paper are dipped into tar and placed between the joints, they will be made closer and more water-tight. Cut the 8-inch boards into 3 feet lengths, and nail them across the bottom, as shown at figure 3, where the bevel ends, the two bottom boards must be beveled slightly upon one of their edges, so as to make a close joint. Then take two of the 1½-inch strips, and make cuts in each on one side with the saw, one inch deep, as follows; measuring from one end, mark with a pencil across the strip 3 feet 6 inches from the end; then mark again across the strip 1½-inch from the first mark, and score between these marks with an ×. Then measure 3 inches and make another mark, and then an inch and a-half and make still another mark, and score as before between these last two with an ×. Then do precisely the same on the same side of the strip, measuring from the other end. Then on the edges of the board score with gauge or make a line with a pencil exactly one inch from the marked side. Then make the cuts on the pencil lines down to the score on the edge, just one inch deep, but no more. Cut away the wood in the places that were marked with an ×, leaving four slots 1½-inch wide, 1 inch deep, and with three inches between them upon each strip. Nail these strips with the cut side inwards, to the upper edge of the side-board, on the outside of the boat, as seen at figure 4. The spaces left in the gunwale are for the row-locks. The strips should be well nailed near the row-locks, and if a quarter-inch flat headed counter-sunk carriage bolt were used on each side of them, it would be very much better than so many nails. A thin washer, or burr, should be used beneath the nut of each bolt. The row-lock pins spould be made of hard maple or oak, in the shape shown at *a*, figure 4. They are one inch thick, one and a-half inch wide at the lower part, which fits into the slot, with a shoulder of half-an-inch, and the top is beveled off neatly as shown. The seats, of which there are two, are made 10 inches wide. The cleats for the seats, one inch thick, one and a half inch wide, and 10 inches long, are nailed 3 inches below the upper edge of the side board. The middle seat goes exactly in the center of the boat, with each edge 4 feet 7 inches from the end of the boat. The end seats are placed with the backs 2 feet from the ends of the boat, leaving 8 inches between each seat and the edge of the row-lock nearest to it. There are cleats for three seats, but only two seats are used at once. When one seat is used, the rower sits in the center, and he can use either of the row-locks, the boat being double-bowed. When two seats are used, one person only rows at one time, but either can row without changing seats, and one always faces to the direction in which the boat moves. This arrangement of seats is very convenient. Eighteen inches of each end is closed in, and makes a locker for holding fish-lines, hooks, or the "painter," which is a light rope for tying up the boat when not in use. This may be fastened to a ring-bolt or a hole bored in one of the locker covers. The long bottom-board, seen in figure 4, 8 inches wide and half-an-inch thick, is nailed as shown, by wrought nails driven from the outside and clinched on the inside. The seat cleats are nailed in the same manner, as are also the side strips. Every nail is counter-sunk and the hole filled up with putty. The seams are puttied or filled with a strip of cotton sheeting pushed in with the blade of a dinner knife. If the joints are made as well as they may be, this is not needed, but two coats of paint will make all tight. The inside should be painted lead-color, made by mixing lamp-black with white paint to a proper shade. The outside may be painted white or a light-green, with the gunwale of a light blue. A few days will be required to harden the paint before using the boat. None but seasoned boards should be used.

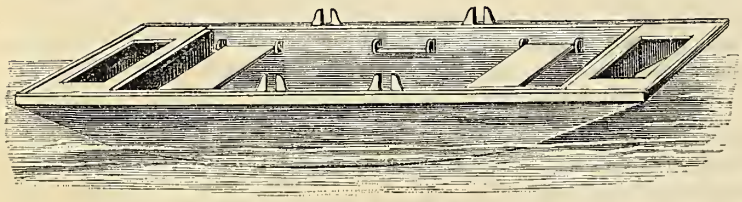


Fig. 1.—VIEW OF FISHING SCOW.

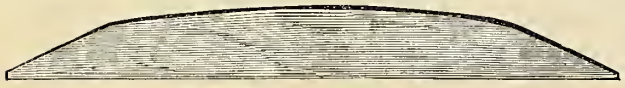


Fig. 2.—SHAPE OF SIDE.

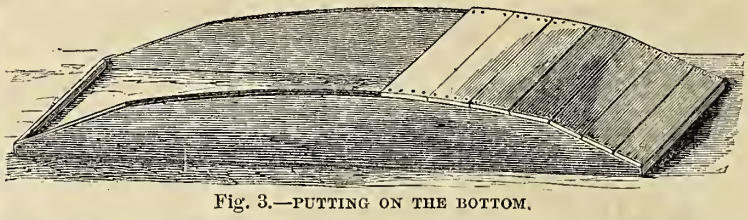


Fig. 3.—PUTTING ON THE BOTTOM.

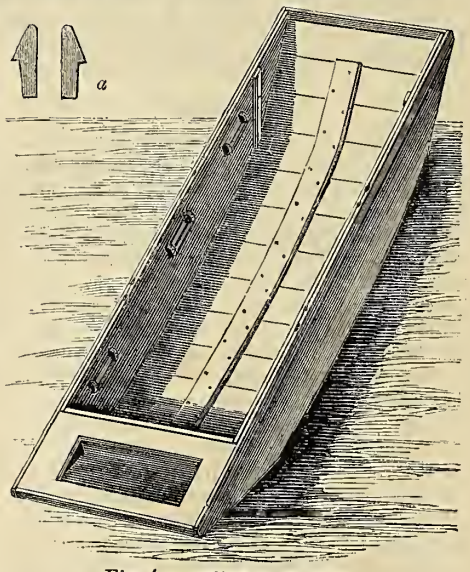


Fig. 4.—INTERIOR OF BOAT.

Some Useful Harrows.

Several of our correspondents have turned their attention of late to harrows, for we have no less than three acceptable descriptions, with sketches, of different implements, all home-made. That shown in figure 1 comes from a subscriber in Michigan, who says: "I have used this harrow, which I made last winter, with so much satisfaction, that I would like others to try it. It is very easily and cheaply built, almost any farmer handy with saw and auger, can get one up for himself, as it is without a single mortice or tenon. It is a complete harrow, light, of easy draft, strong and durable, and fits itself well to the unevenness of the ground; it excels on stumpy land, as one side will raise up when passing a stump. I have used it with good effect this spring in harrowing corn and potatoes, also for all the purposes of a harrow on the farm."

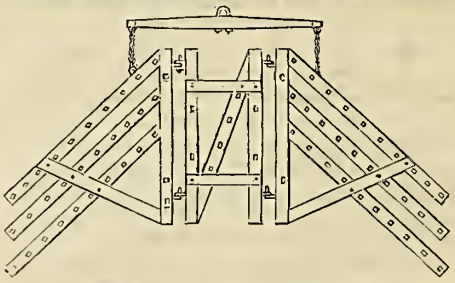


Fig. 1.—A MICHIGAN HARROW.

Another "subscriber" describes his harrow, (figure 2), as follows. It is made of two wings, each of 4 pieces 5 feet long, of 3 x 4 oak timber. Each bar has five teeth of half-inch square steel,

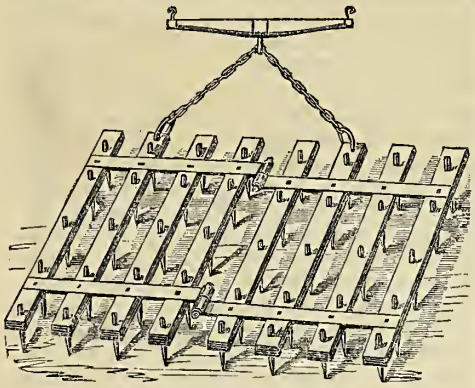


Fig. 2.—JOINTED HARROW.

placed a foot apart. The wings are held together by iron straps, bolted with inch bolts to each timber, and gained into the timbers. The ends of the straps are turned up, so as to make hinges, and in these strong bolts are placed to hold the wings together. A chain is fastened by clevises to the harrow, for the draft, and the closeness of the scoring may be regulated by changing the link of the chain to which the draft-tree is hooked. Still another

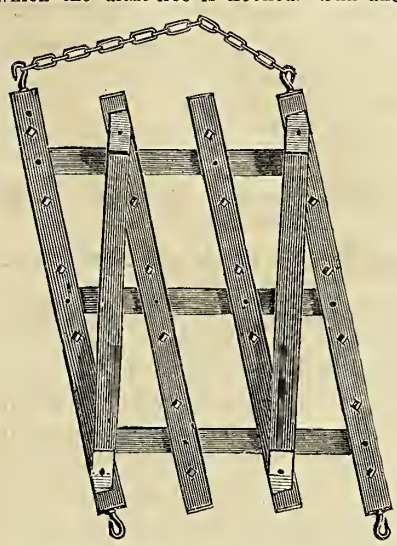


Fig. 3.—WEED AND SOD HARROW.

harrow, which serves to work weedy ground, and gather the weeds for removal and destruction, is described by a farmer in Ohio. The form is shown at figure 3. The cross-pieces, which hold the frame together, are bolted on; the teeth (fig. 4) are sharp and curved, so as to tear up roots of weeds, and collect them into bunches, or by turning it to harrow a plowed sod. There is no work on the farm of more importance than harrowing, and the ideas

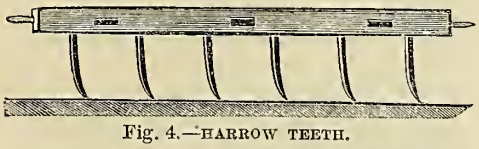


Fig. 4.—HARROW TEETH.

above given will be of great service to many of our readers, who may find time to turn them to account during the coming winter season.

How Can we Keep the Boys on the Farm?

A BOY'S VIEW OF THE MATTER.

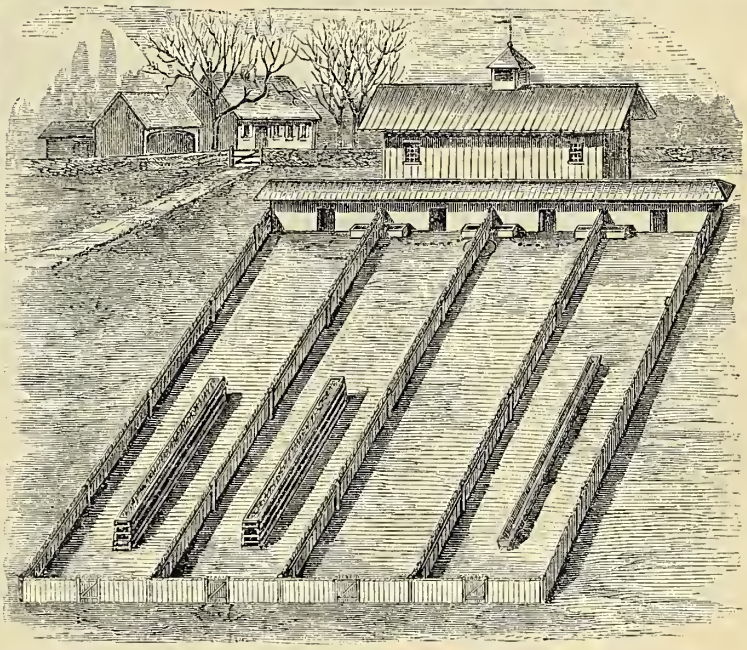
The importance of the question given above is shown by the frequency with which it is discussed in this and other journals. We do not know that we have seen anything on the subject from one of the parties most interested, the boys, and we are pleased to give place to the following from "E.W.," a young man in Ulster Co., N. Y., as it shows that boys are thinking of the matter, and that at least one of them has very sensible views on the subject. He says: "It was with more than common interest that I read 'How can we keep the Boys on the Farm?' by Mr. Waring. It seems to me that this question can be answered very readily, but in the first place let me say a few words as to the cause of the dislike, that farmers' sons have for their fathers' occupation, and which seems to drive them into some other business. We boys, (for I am one), want recreation sometimes, but the farmer as a general thing, expects his boy to plod on from day to day and to take an interest in the work, whether he (the farmer), is at home or not. He expects him to do first class work with the poorest tools, expects the boy to understand what work he wants done, and just how he requires it performed, whether the boy has ever done that kind of work before or not, and then to cap the climax, does not explain to the boy how he must do it. In case the boy asks for information, he is sometimes answered in this way: 'I should think a boy as old as you are, would know how to do that. Why, when I was of your age, there wasn't any work on the farm I couldn't do, and a plaguey sight more of it too, than you do.'

"We boys sometimes like to spend a few hours in fishing, hunting, or something of the sort, but we are often told when we ask permission for a holiday, 'Yes, you can go a fishing on the woodpile, or you can hunt among the potatoes down cellar, and mind you pick every sprout off.' The above is not my own experience, but it is the experience of too many of the farmers' sons in this County. Now how can the boys be persuaded to stay on the farm? As a boy, I say by making farm life a pleasure instead of a drudge from day to day, give the boy an interest in the farm, ask his opinion as to the best mode of doing a piece of work, and if his way is a good one, follow it or adopt a part of it, and let him see that you think something of his opinion, even if he is a boy; this will stimulate him to study agricultural works, and to gain all the information of farming he can.

"Let the boy have a calf or a yoke of steers to call his own, and *let them be his*, and when the calf becomes a cow, or the steers oxen, if the boy wishes to sell, let him, and use your influence to persuade him to invest the money received in something that will be remunerative; do not, as some farmers do, put that money into your own pocket, and tell the boy that it is all the same as though he had it to spend, as the farm will be his by and by. Very few boys understand such talk, and if they do, would rather have one dollar now than the prospect of having ten dollars in ten or fifteen years time. If the boy wishes to purchase young stock with the money received for his cow, let him, and if need be, set apart an acre or two for him on which he can raise some of the feed required to keep his cattle through the winter. If thought best, let the boy pay a little in the way of rent for the land; give him a day now and then to properly work it; encourage him to raise what you know to be the most profitable; furnish the manure, give a cheering word, an improving nod (such things go a great way), do not act as though you begrudged him the land and the time; do not give him 'that corner over there,' that you know will not grow white beans, but let the land be good. You will never lose anything by it, on the contrary, you will be the gainer by so doing, for the boys will see that you wish them to succeed in their undertakings."

A Plan of a Stock Lot.

A subscriber at Ottawa, Kansas, wishes for a plan of a stock lot, for the winter feeding of horses, cattle, sheep, and hogs, in which each may be kept separate, and yet all may be fed and watered from one barn and well. The plan given in the accompanying engraving, would serve the purpose. The barn is in front, and there is a shed in the rear. If the shed is not already long enough for the purpose, it may be extended. A door from the shed opens into each lot, and the shed may be divided to correspond with the yards, or not, as may be desired. A feed rack may be in each yard, and the water



PLAN FOR A STOCK LOT.

troughs, which are placed against the shed, may be connected together by inverted siphons of lead pipe; these are buried in the ground, so that when one is filled all are filled, or by a spout at the eave of the shed into which the water may be pumped from the well, and from which it would flow into each one. If the yards are needed of larger size, they may be extended on each side, leaving entrances at the ends of the shed. If any of our readers can furnish any more convenient plan, we shall be happy to hear from them.

Hints and Helps for Farmers.

BY L. D. SNOOK, YATES CO., N. Y.

HAY-RACK AND MANGER.—A cheap and conveni-

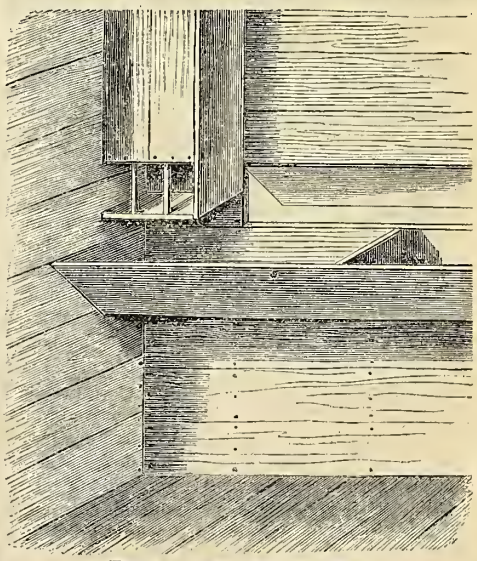


Fig. 1.—RACK AND MANGER.

ent hay-rack and manger is shown at figure 1. The front of the manger should be of oak or other hard-

wood plank, two inches thick, and one foot wide, the lower edge of which is placed about 2½ feet from the floor; the bottom should be one foot wide. The side of the hay-rack is one foot wide, the front is 18 inches wide; the top and bottom being of the same width, so that hay will not lodge. The bottom is made from 1½-inch hard board, and is placed one foot above the top of the manger. Two guards, one inch in diameter, and one foot in length, are placed in an upright position across the opening. At the front of the manger is a swinging door, which is shown partly open. This opens into the feed-passage. The manger may have one end partitioned for feeding grain. All corners should be smoothed and rounded off, and to make it durable, I would attach a thin, flat bar of iron to the upper edge of the manger by screws or rivets.

STABLE FITTINGS—SAFE-GUARDS.—Many horses are injured by becoming untied or breaking loose and ranging in the stable, and being kicked by other

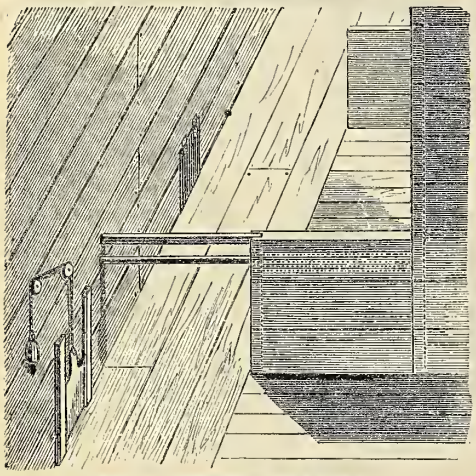


Fig. 2.—INTERIOR OF STABLE.

animals; this of course is generally the result of carelessness in tieing or adjusting of the halter-head. To guard against such an accident, it is necessary in some manner to bar the passage-way in rear of the stall. A very good plan of doing this is shown in figure 2. The arrangement consists of a bar of hardwood, 2 inches square, one end of which fits closely into a hole made two inches deep in the boarding, at the rear of the stall, or a notch is sawed into a piece of hardwood board and nailed at the point desired, as shown in figure 3. The opposite end fits into a recess cut into the upper end of the elbow of the stall, and may be secured by a wooden pin, but it will be quite unnecessary, as horses, when loose in a stall, will rarely try to raise and throw this bar out of position. A more secure and convenient arrangement consists of a round stick, 2 inches in diameter, which fits loosely into a hole bored through the scantling at the front of the elbow of the stall, and 2 inches from the top of the same. A hole is also bored into the wall, at the rear of the stall, into which the end of the bar fits when in position; when not in use it is simply pushed inward, sliding upon a board, the end striking against the standard, if it is at the right place; if not, a hole is bored through this also, and the board extended beyond, with a block nailed at a joint, letting the end of the bar project ⅞ of an inch beyond the elbow, so that it may be moved in position at night. Two forms of doors for the removal of soiled bedding, etc., are shown near the floor in figure 2. One is a slide door, and is retained in position by a weight. The other is secured by hinges at the top, upon which it swings; a weighted cord may also be used for keeping it open, or a leather strap may be nailed to the lower end, and hooked over a nail when the door is swung open.

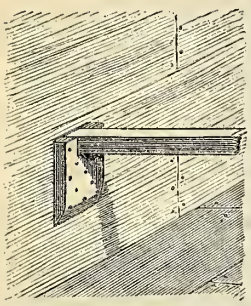


Fig. 3.—REST FOR BAR.

SKELETON DOOR FOR COOPS.—To protect young chicks from weasels, rats, and other enemies, at night, I use a skeleton door, as shown in the engraving, figure 4. For new coops use slats about

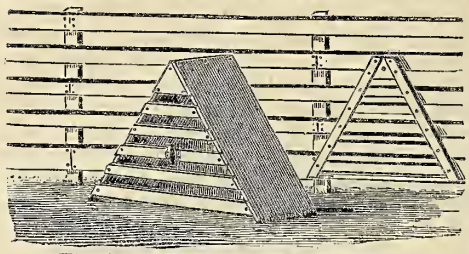


Fig. 4.—SKELETON DOOR FOR COOPS.

2½ inches wide, or if old coops are to be used, I lay them down, with the slat side up, and fit pieces of boards in each space, then nail on a couple of cleats, and make a hole in the top piece. During the day it may be hung upon the fence as shown in the engraving. When placed upon the coop, a wooden button secures it firmly in position. A perfectly close fit is not necessary or desirable, but no space should exceed a quarter of an inch. I prefer the bottom of the coops to be open, and move the coop once in three or four days. By the use of this skeleton door, chicks may be kept in until the heavy dews disappear, or during rainy days, when they would otherwise roam around in the wet grass.

TO PREVENT CATTLE THROWING FENCES, HOOKING, ETC.—To prevent a cow from throwing fences or hooking other cows, make a wooden strip 2½ inches wide, and ⅞ of an inch thick, and attach it to the horns by screws; to this is fastened, by a small bolt, a strip of hardwood, 3 inches wide, ⅞ an inch thick, and of a length sufficient to reach downward within an inch of the face, and within 2 or 3 inches of the nostrils. In the lower end of this strip are previously driven several sharp nails, which project about ¼ of an inch. The arrangement is shown in figure 5; the strip, when properly attached, allows the animal to eat and drink with all ease, but when an attempt is made to hook or to throw a fence, the sharpened nails soon cause an abrupt cessation of that business.

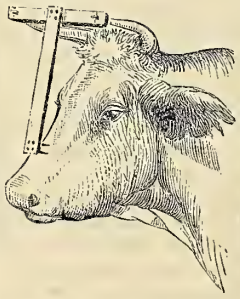


Fig. 5.—CATTLE CHECK.

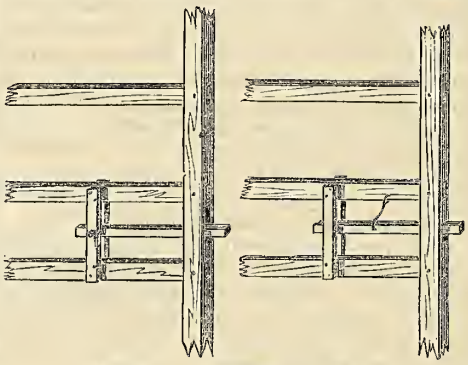


Fig. 6. LATCHES. Fig. 7.

DESIRABLE GATE LATCHES.—Some of the most desirable forms of gate latches, and the manner of constructing them, are here shown. That in figure 6 is the most simple in construction, the latch should be from 2 to 2½ feet in length, ⅞ inch thick, 2½ inches wide, and made of hardwood. Either of the forms shown in figures 8, 9, or 10, will be desirable for securing the end of the latch when the gate is closed. The plan of figures 8 and 9, allowing the gate to open both ways, and that of figure 10 but one way. In figure 7 the latch is self-shutting, a strong string, or short chain, connects the latch with the board; the outer end of the latch fits loosely into the gate frame, while the opposite end works freely between the connecting pieces. The one in figure 11 is also self-acting, six inches of the latch is made one inch in diameter, and fits loosely into a hole in the part *A*; between this and the shoulder of the latch a coiled spring is used. It is plain that when the latch is pushed back, the action of the spring will again bring it forward. The plan of figure 12 is different; two inches from the inner end, a piece ⅞ of an inch square is cut out and through the connecting pieces; 2½ inch wooden pins are inserted 2½ inches apart, between which the latch slides when in use; when the latch is moved outward, the notched part falls by its own weight, and catches over the lower piece. To prevent shoving back too far, a ¼-inch wooden pin is inserted in the latch, as shown.

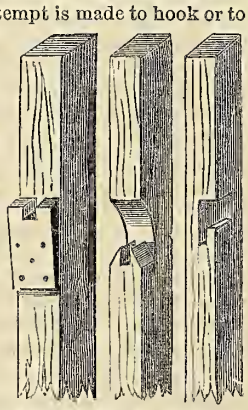


Fig. 8. Fig. 9. Fig. 10.

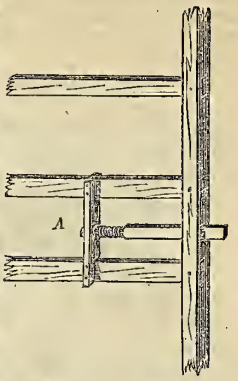


Fig. 11.—LATCH.

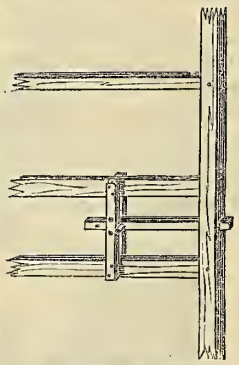


Fig. 12.—LATCH.

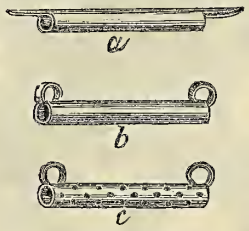
The Foreign Cattle and Beef Trade.

The exportation of live cattle, fresh beef and mutton from the United States and Canada to Europe, although it began only about a year ago, has already become a business of considerable magnitude. The first shipment of fresh beef from New York was made in October 1875, and since then over 10,000 carcasses have been exported. The business was originally in the hands of one wealthy stock dealer, but recently shipments have been made by two others. The first party has now contracts with 17 ocean steamers, in which refrigerators are provided for the meat. This new business is one of great interest to farmers and consumers of meat in this country, as well as in England and other countries, although, curiously enough, each of these parties interested, is affected in an exactly opposite manner. The American farmer hopes for an increase in the value of his beef cattle, while the English farmer dreads a decrease in the price of his. The English consumer, on short rations, because of the high price of meat in his markets, hopes for a better supply and lower prices, and the American consumer, paying all he possibly can, and hoping for a reduction of his butcher's bills, fears a shorter supply and still higher prices. To make the business more complicated still, we find the reason for it all existing, on the one hand in the more wholesome feeding of our cattle upon grass, hay and corn, and the more mature condition in which they come to market, in consequence of which the meat is of a better quality than the bulk of the English beef, and quite equal to their very best; and on the other hand, in the hasty and forced manner in which English farmers have of late fed their beeves, using oil cakes of various kinds, and stall feeding in place of pasturing and feeding upon roots, hay and grain; and of rushing their cattle to market loaded with fat, instead of flesh, at an age far too early for ripeness and healthy maturity. The whole question, therefore, becomes a most interesting study for farmers on both sides of the water, and one which excites the hopes and fears of two great meat eating nations. The most important question to every

one interested is, can the business be made permanent? At first we were doubtful, foreseeing the great risks, the heavy expenses, and the small margin for profit. That the business increases in magnitude week by week, is not, to our mind, any proof that it is either profitable or will be permanent. In the London "Agricultural Gazette," of September 4th, we find the following: "'We continue to receive American consignments of excellent quality;' 'American supplies continue about the same with regard to quantity, condition, and demand.' As regards the value of beef in New York, or the charges of transmission, I can give no information; as a consumer, and not a producer of meat, my anxiety as to the success of the experiment is at an end. The week ending Aug. 19 was remarkable for great heat, the mean temperature exceeding the average for the same week by no less than 10°, and we have no complaints of the condition of the foreign meat that appeared in the metropolitan market. Every obstacle appears to be removed, the home trade monopoly broken through, and meat from the far West exhibited on the Newgate market shambles during the tropical heat of this summer as perfect in condition as meat sent up from Leicester or York; in fact in finer condition, ripened by having been slaughtered 14 days—tender and ready for the table. This marvellous triumph of art over nature bursts upon the consumer by surprise. The rapid development of the trade is astonishing. The first trial cargo arrived in Liverpool at Christmas, and proved so successful that the flow of meat is checked only by the difficulty in preparing the holds of the vessels for the reception, and the necessary engineering arrangements. It is impossible to measure the effect that this opening of the meat market will have upon British agriculture. It is beyond controversy that a large portion of the native meat exhibited on the butchers' stalls is of inferior quality. The artificially fed meat is disproportioned as regards the lean flesh and fat, owing to the injudicious use of oleaginous substances, greatly to its deterioration. Meat so prepared will not be able to compete with the beef from American grass fed bullocks."—In the same paper we notice that 250 carcasses of American beef sold in Glasgow for 6½ pence sterling per pound. This is equal to 14½ cents of our currency (not gold). The same week the same cattle could have been sold in New York at 12 cents per pound. 2½ cents per pound can scarcely pay more than the expenses, leaving but a shade of profit, and no margin for loss by occasional damage. If this were all, the business would probably stop suddenly. But there is another influence under which support is given to it. Our market is drooping under an excess of supply, and a general downward tendency of prices. So long as this continues, a scarcity, whether natural or artificial, of the best grades of cattle here, helps to sustain the market considerably, and although the foreign trade yields no profit, it will continue so long as an indirect advantage can be gained by it in the home market. But it will continue no longer; nor will any persons enter into it, except such as can make it count in this way to their advantage here. When the state of the markets here promises a fair profit on all the stock brought forward for sale, or the condition of the English markets offers no inducement for shipments, they will cease. The business is simply a double acting safety valve, which yields to pressure upon either side, and when the pressure is equalized, ceases to act. There can be no permanence about such a business unless the conditions become permanent. The variation is so small and must continue to be so small, which may serve to upset the conditions, that neither any great benefit nor any serious harm can happen to either of the interested parties, here or in England. We cannot see that farmers here have any thing to hope for, or consumers have much to fear in the shape of higher prices, nor that English farmers have much to dread, or English consumers have any great expectations as to lower prices there. The gain will be to the English people, who will discover that the long vaunted British beef has disappeared, and that America now produces the best beef in the world. This will be an agreeable thought for an American, although he may have to pay something more for his roast as an offset. That the business will continue depends upon circumstances, the continuance of which cannot be predicated, the only thing which can make it permanent is the continued neglect in England of the breeds of beef cattle, that are most productive of beef of the first quality, and the continued expenditure of capital, labor, and land in the production of fancy stock, which does not contribute food to the markets any more than do so many elephants or giraffes in a menagerie.

How to Make a Perforated Bit.

The perforated bit for sucking cows is not made for sale anywhere, so far as we know. It can be made very easily as follows. Take a piece of half-inch iron pipe, nine inches long; split the pipe at each end for an inch and a-half, and cut off one-half of the split. The pipe then appears as at *a* in the illustration. The ends are then heated and worked on the anvil into loops, as shown at *b*. The pipe is then held in the vice and a few holes drilled through it, as shown at *c*. It is then ready for use, being fastened by a head-stall, strap, or old bridle on to the cow's head.

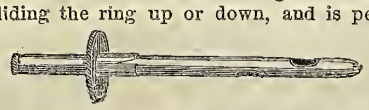


PERFORATED BIT.

The Business of Sheep Breeding.—Although the price of wool is lower all over the world than it has been for many years, there is no evidence anywhere of any depression in the business of sheep-breeding. On the contrary, the demand for breeding sheep, ewes as well as rams, is very brisk, and we have more inquiries as to choice of locations for sheep farms in the West, and the purchase of good stock animals, than at any previous time. The same is noticeable in other countries. In one issue of the "Mark Lane Express," (London, England), we counted recently the sale of no less than 11,176 choice breeding ewes and rams, of various breeds, but chiefly of the more popular Shropshire sheep, of which one sale of 2,500, one of over 3,000, and another of 1,500, are from some of the first premium flocks in the county of Shropshire. The growing demand for good mutton and lambs, is evidently making the growth of wool a secondary interest, as it ought properly to be with sheep breeders.

A Safe Milking Tube.

The dangers of using straws, quills, or other similar tubes which may happen to be at hand, to insert into a cow's teats, which may be obstructed by any cause, so as to withdraw the milk, consists in the liability of the tube to break within the teat, or to enter so far that it can not be drawn back. The consequence of such an accident might be very serious. A milking-tube of silver, specially made to draw the milk in an emergency, when it cannot well be done by hand, has been sent to us by the maker, Mr. G. P. Pilling, 701 Chestnut st., Philadelphia. An engraving of the tube is given herewith. It is made to fit a long or short teat, by sliding the ring up or down, and is perfectly safe to use. As a set of four tubes costs but a trifle, it would be a great convenience to an owner of a cow to have one in readiness for emergencies.


MILKING TUBE.

How to Keep Tools Clean.—"J. D.," Allegheny Co., Pa. When tools are clean and bright, they may be kept so by wiping them, before putting them away after having been used, with a cloth dipped in melted paraffine. If they are rusted they may be cleaned by soaking them in kerosene oil, and then rubbing them with an oily rag dipped in the very finest emery powder.

A Rustic or Temporary Road Bridge.

The exhibit of the U. S. Government at the Centennial Exhibition is one of the most interesting and instructive portions of what has been the most valuable of any one of the international exhibitions yet held. In examining the Government exhibit, we came across a model of a bridge, intended for the passage of an army across an unfordable stream, which was designed by Sergeant N. Gentner, Co. A., Battalion of Engineers. This bridge, of which an engraving is given on the next page, constructed of rough timber, and put together without a bolt or the use of any tool except an ax, would be found especially useful in case of the sudden destruction of a road bridge by a freshet or by fire. Four handy men could, in a few hours, easily construct a bridge of this character, strong enough to support a loaded wagon and team. Nothing is required but suitable timber, and some ropes or chains. For a rustic bridge, across a stream or a ravine, it would also be very appropriate and remarkably picturesque; in this case, being permanent, chains or wire rope should be used for the fastenings, as bolts or spikes are unsuitable, on account of the elasticity and constant although slight motion of the parts when under a burden. The illustration describes the bridge sufficiently without much other explanation. The ties should be securely fastened or knotted. When ropes are used, safe knots should be made, and sufficient lashings to resist the strain. The safest fastenings, if chains are used, are made by passing one link through another, and then putting a "toggle," or piece of stout wire or bar iron, through the link that is inserted. If the ends of the bar or wire are bent, it cannot work out of place. The main supports of the floor are the ropes or chains in the center of the bridge, and those from the middle of each half. These are double, and to procure the proper tension, "toggle poles" are used to twist them until sufficiently tight, when the "toggles" are held by or fastened to the timbers, after the manner in which a common bucksaw is tightened, or a load of saw logs are bound down by the tightening pole. Chains or ropes are stretched along each side as guards, and a twist is taken around each piece of timber passed by the guards. The floor is laid in the usual manner, and to hold the floor-planks in place, and yet to permit the free motion of all parts of the bridge, a chain may be laid down along each side of the floor, and held by stout staples or broad-headed spikes driven into each plank. This bridge has the advantage of cheapness, rapidity of construction, and of great strength and safety with comparatively light timbers; while the materials are of a kind easily procurable almost in any locality.

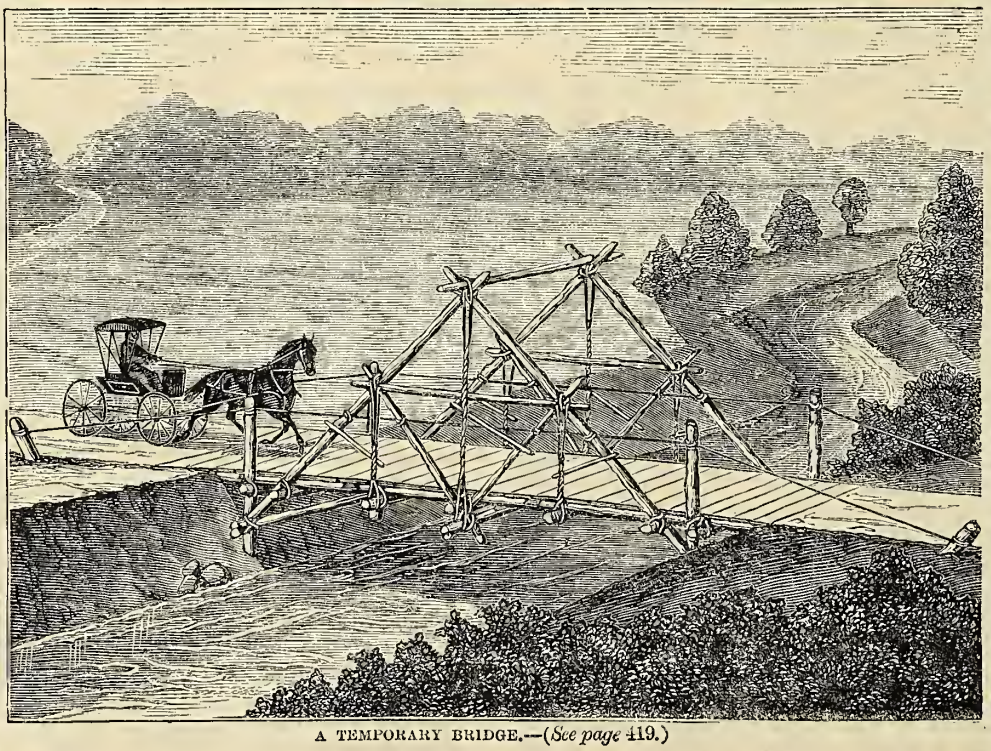
Color of Berkshire Pigs.—Several have asked what is the proper color of the pure Berkshire. It is not entirely black, but has a white spot on the face, and white feet. If there is a white splash on the side near the shoulder, it is not a disqualification, but this is not desirable. Pure Essex pigs are entirely black.

Sale of the Ellman Southdowns.—A sale of a notable flock of sheep has recently occurred at Landport, County of Sussex, England. The flock was the Glynde flock of Southdowns, established more than a century ago, by Mr. Richard Ellman, of Glynde, and since then bred continuously by his son and grandson. There were sold 200 ewes, 400 lambs, and 40 rams, and this flock, which has become historical, has now been scattered and has disappeared. Mr. Ellman is referred to in Stewart's "Shepherd's Manual," as the first breeder who brought the Southdowns into prominence, and made them the most reputable mutton and short wool sheep in England; he commenced his labors 50 years before Mr. Jonas Webb began his remarkable course of improvement upon the same breed.

White Flowers for Winter.

Those of our readers who take care of a few flowers in the winter, and to whom the appearance of a single bloom is an event of great interest, would be much surprised to visit a florist's establishment, where the business is growing flowers for market. To look into houses, each a hundred feet long, and to see each filled, a long row on each side, with one kind of plant only, to be told that this brings so much a dozen, and that so much a hundred; to learn that as soon as the crop is cut off of one lot of plants, they will go to the rubbish heap to make room for another set, destroys all the poetry and sentiment connected with flowers. To the florist it is a question of so many dollars for such a number of square feet of glass, and the flowers are not grown because the grower loves them, but because they give him the wherewith to buy bread and butter, and shoes for his family. If one goes to a fashionable wedding, or an equally fashionable funeral, and sees in either case the elaborate decorations made up of solid flowers by the wheelbarrow-load, if not the cart-load, and costing hundreds, and sometimes thousands of dollars, he wonders where all these flowers, and so many of one kind, could have come from. It would take a long journey around the suburbs of New York, or other city, to find the *factories*, for such they really are, where these plants are made. It is often the case that small establishments grow but three or four—and sometimes only one thing, and the decorative florists—"bouquetists" they call themselves in England—draw their materials from many different sources. In floral decorations, especially for weddings and funerals, the great majority of flowers must be—for fashion has so ordered it—white, and to those who grow flowers, good whites, and a succession of them, are of great importance. Those who carefully examine floral designs, will see that the groundwork is usually made of some very small white flowers, serving as a background for whatever else may be added. Candytuft, Sweet Alyssum, and such things are largely used, but these are not so effective as certain composites, such as the Eupatoriums, Stevias, Piquerias, etc., of which immense quantities are consumed, and must be grown to meet the demand. The character of these flowers will be understood from the engraving, which is that of an *Eupatorium*, own brother to the well-known Thoroughwort, or Boneset, which, though the flowers are similar in shape, have not the pure white of those of its cultivated relatives. The difficulty with the white flowers of this character generally cultivated by florists has been, that they came in bloom just too early, or too late, to meet the great demand of the Christmas and New Year holidays, and it was difficult on the one hand to retard, and on the other to hurry up the well known kinds. A few years ago Mr. Peter Henderson came across, in the hands of some florist of less enterprise, a white flowering plant, which just supplied the gap, and most accommodatingly came into flower just at the time when it was most needed. The fact that it had no name did not prevent Mr. H. from seeing its merits, and securing it. The plant turns out to be a West Indian species of the Boneset genus, *Eupatorium triste*, and it bids fair to become the "missing link" between the too early Stevias and too late Eupatoriums. The engraving gives a flower-cluster and the upper leaves of about the natural size.

WINTER-FLOWERING EUPATORIUM.—(*E. triste.*)



A TEMPORARY BRIDGE.—(*See page* 419.)

Weigelas—Old and New.

None of the flowering shrubs of recent introduction have proved more worthy of general cultivation, than the Weigelas. We use the term "recent" in full knowledge of the fact that the plants were introduced a quarter of a century or so ago, but so slow are our people in learning what is good and desirable among trees and shrubs, that plants that have been in cultivation as long as the Weigelas, are still new to the great mass of the people, and it is for these that we write, and not for the very few to whom a plant that has been in cultivation for two or three years has already become old. We are well aware that the shrubs introduced as Weigelas have been found to be not sufficiently distinct from an older genus, *Diervilla*, and are now by botanists placed in that, and that they are properly Diervillas, but having been introduced as Weigelas, and being still so called in nearly all the catalogues, it is expedient to keep that as the garden or common name. When first introduced we had only *rosea* (*Diervilla Japonica* of botanists) and *amabalis*, which, though differing in habit, is regarded as only a form of the other. Since then, so readily are the plants raised from seed, the number of varieties has increased, some of our nurseries offering as many as 20 named sorts, and the European catalogues have still more. Some of these varieties are not very distinct, while others are well marked and desirable. The variety *Deboisii* is one of our favorites, the profusion of its very dark-rose or crimson flowers being something wonderful; another we highly prize is one called *Hortensis nivea*, with flowers of a pure white, and remaining so; there are others, of which the flowers are white when they first open, but afterwards change to blush or rose color. This flowers profusely in spring, and then, provided the season is not, like the last, too dry, it continues to bloom more or less through the season. In examining the shrubs at the Centennial Exhibition,

we came across a Weigela, in the collection of Messrs. S. B. Parsons & Sons, Flushing, N. Y., which we had not seen before; this was labeled *W. Lavallei*, and may be called Lavalle's Weigela. This, though introduced four or five years ago in Europe, does not appear to be much known in this country; it originated with M. Lemoine, who claims that it is a hybrid between *W. arborea* and *W. multiflora*; however this may be, it is a quite distinct and interesting variety. Its flowers are pendulous, and of a very dark reddish purple, with a yellow center, the colors making a rich contrast. The Messrs. Parsons inform us that this variety, like the white one just referred to, continues to bloom nearly all the season. The engraving, made in September, is of course from the late flowers; the first flowers appear in pendent clusters, and more numerous than here shown, and they are also larger. The English florists regard this as a fine forcing variety; indeed, all the Weigelas force readily, as our market florists well know, as pots of the common kinds, forced into full bloom in March and April, are among the plants which these dealers sell at that season to the great disappointment of the purchasers.

LAVALLE'S WEIGELA.—(*Weigela Lavallei.*)

LEAVENWORTH'S ERYNGO.—(*Eryngium Leavenworthii.*)

Leavenworth's Eryngo.

In recalling the incidents of an extended journey across the Continent many years ago, before Pacific railroads were even planned, none are remembered with more satisfaction than the meeting with, in their native wilds, plants we had long known in gardens at home. To come across Drummond's Phlox in immense beds, to see Eschscholtzia by the acre, and in the mountain passes of the Pacific Coast to meet with the charming Nemophilas, always garden favorites of ours, and many other friends literally at home, was an experience that can only be appreciated by those to whose lot it has fallen. We felt something akin to the pleasure with which we met these well known plants in their native haunts, when the conditions were reversed, and we came upon a plant we had much admired in its wild state, quite at home in a garden bed. In looking about the garden after a (for us) prolonged absence, there was in full glory of the richest purple, Leavenworth's Eryngo, *Eryngium Leavenworthii*, a plant that we had made the acquaintance of in western Texas, and for which we had formed a great liking. Among the many seeds, sent by kind friends all over the country, were those of this Eryngo, about which we had quite forgotten, and the plants in their perfection were a most welcome surprise. The name *Eryngium*, given to a genus of plants, is one of which the meaning is not well known, but there is a species in England for which the name has been shortened into "Eryngo," and as it has one syllable the less, we adopt it. The plants belong to the family of Umbellifers, most of which have their heads in that form of cluster called an umbel; the small stalks (or rays) that bear the flowers, or small clusters of flowers, start out from the main stem, like the sticks to an umbrella, as in the parsnip, carrot, fennel, parsley, and other common plants of that family. There is generally, at the point where the umbrella sticks start from the main stem, a whorl of leaves, much smaller than the ordinary leaves, which form what is called the involucre. This flower arrangement is so frequent and so striking in this family, that one can readily recognize a member of it by this character alone, but there are marked exceptions to this general rule, of which the Eryngos are examples; in these the umbel has no rays, (the umbrella is without sticks), and the flowers are all brought close together in dense clusters or heads, and the whole appearance so unlike that of the other plants we have named, that one would not suspect these of belonging to the same family. But the real distinctions of the family depend upon peculiarities in the flower and fruit, which need not be here described, and it would be easy to show that the Eryngos are Umbellifers, though they have no umbels. There are two Eryngos found as far north as New Jersey, which have globular heads, and not at all showy. Our Texan species, named in honor of Doct. Leavenworth, who many years ago first discovered it in Arkansas, is an annual; it grows two to three feet high, and is much branched. The stem first bears a flower head, beneath this there start out two branches, each bearing another head; from beneath each of these heads come one or two more branches, as the case may be, and so on. At first the plant is not very attractive, but soon the older heads, their involucres, and the little tuft of

leaves at the top of each, begin to turn from green to purple; then the newer heads and the stems assume the same hue, and finally the whole top of the plant takes on a dark purple color, that is exceedingly rich, and pleasant to look upon. It is too generally the fault of annuals that they do not last, but these heads, as we write, have been in perfection for some weeks, and will apparently remain so until frost puts an end to them. The engraving shows a portion of the upper part of a plant, below the natural size, the full grown heads being three inches long, and though it lacks the rich color, it gives a good idea of the form. It remains to be seen how long these heads, simply dried or sulphured, will retain their color. Even if they fade, they will, from their peculiar form, be desirable in making winter bouquets, and we think that decorative florists would find them useful in the recent state, to work up into some of their designs.

A Pear-like Apple.

Mr. R. J. Black, Bremen, Ohio, sent us at the end of July last, a specimen, which was to all external appearance a pear, but which grew upon an apple

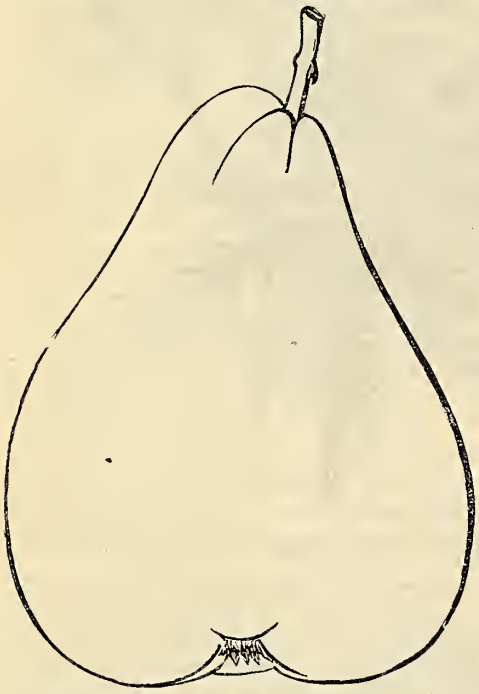


Fig. 1.—OUTLINE OF PEAR-SHAPED APPLE.

tree of the Sops of Wine variety. Accompanying the pear-shaped fruit was a small apple, which grew close to that, both being produced from the same cluster of flowers. We give outline engravings of both specimens, a little smaller than the natural size. So closely does the larger fruit resemble a pear, that Mr. Black suggested that it might have resulted from hybridization, and that the apple blossom might have been fertilized by pollen from a pear-flower, as might well have happened, for there was a pear tree growing within the distance of a rod of the apple. Upon cutting into the supposed pear hybrid, it was at once evident from the feeling and *sound*, that it was an apple, and not a pear that we had in hand; the whole appearance of the interior, as well as the texture and flavor of the fruit, were those of an apple. A careful examination with the microscope, failed to show any of the indurated cells, which are so common in the pear, and which make so many pears "gritty," especially near the core. Upon comparing the flesh of this and that of an undoubted apple from the same tree, no difference was to be distinguished in the ultimate cells of the two. It is hardly supposable that hybridization, had it occured, would show itself in one particular only—external shape, and we feel safe in saying that this interesting specimen was a malformed apple. A few years ago we saw several pear-like fruits taken from an apple tree, the branches of which interlocked with those of a pear, and for which it was claimed that they were hybrids; we were not permitted to make a thorough examination in that case, but the fruit now in question throws much doubt upon the hybrid origin of those. Such freaks are always interesting, as they often throw light upon doubtful points, and we hope that our friends will call our attention to such as they may come across.

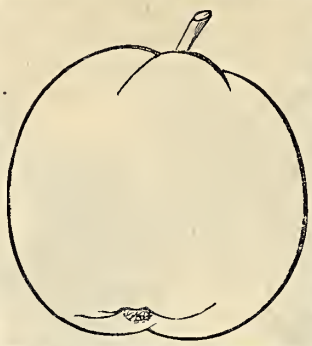


Fig. 2. APPLE FROM SAME BRANCH.

The Pinneo Pear Tree.

As one of the duties of the Centennial year, we recently paid a visit to the original Pinneo pear tree, it being among the oldest inhabitants of the Nutmeg State. It still lives in a green old age, upon the farm of Edward M. Clark, in the town of Columbia, and is reputed to be about 140 years old. The stem of the tree is two feet or more in diameter, and still bears fruit. It is quite widely distributed through Columbia and the adjacent towns, and has had a good local reputation for a century or more. Notwithstanding the introduction of new varieties through the influence of our horticultural societies and publications, it still maintains its place as a first rate summer fruit. The history of this excellent pear shows the great progress we have made in horticultural matters. It lay buried in Connecticut for a whole century, before it was made known to the public. It was grown in such abundance, that the farmers sent their surplus fruit to Hartford, and from that city it was sent to Boston, where the people know what fine fruit is. C. M. Hovey got hold of it in 1843, exhibited it, grafted it, and introduced it to nurserymen and fruit-growers as the "Boston" pear. Fifty years before, Edmund Yeomans, a discriminating nurseryman of Columbia, and familiarly known as Uncle Ned Yeomans, had propagated and sold the same variety, named after the elder Deacon Pinneo, who found the seedling in the woods and transplanted it to his garden. It is unquestionably a seedling, for the suckers from the roots, when transplanted, as many of them have been, bear the same fruit as the tree. At the present day, with our horticultural and agricultural journals, our fruit exhibitions, in almost every county in the older States, and the American Pomological Society, to gather up results, and winnow the chaff from the wheat, such a history as this would be quite impossible. The world does move. CONNECTICUT.

THE FRINGED GENTIAN.—A correspondent, who justly admires this, one of the most beautiful of our wild flowers, speaks of the difficulties of cultivating it, and suggests that specimens be marked when in bloom, to be removed to the garden before the ground freezes. Our friend overlooks the fact that the plant is an annual, and that this procedure would be useless. Having heard that this could not be raised from seed, and could not be cultivated, we procured some seed last fall for trial. A part of the seed was sown in a box in a cool greenhouse, and a part outside upon a slight snow. In both cases the young plants came up in the greatest abundance, and those in the box, when large enough to handle, were pricked out into a bed outside. The unprecedented drouth disposed of both lots, but we are quite sure that had the season been an ordinary one, we should now be enjoying the Fringed Gentian in our own garden. Our correspondent says that this "will only grow in the soil and companionship it loves." Our experience with the Cardinal-flower, (Lobelia), and other natives of moist localities, indicates that one cannot tell what a plant will do in the garden until it is tried, and our success in getting a start with the Fringed Gentian, is such as to induce another trial in, what we hope may prove to be, a more favorable season.

Flowering Hyacinths in Moss.

BY PETER HENDERSON.

Most of the readers of the *American Agriculturist* who have cultivated Hyacinths and other Dutch bulbs, know how to manage them when grown in ordinary soil in pots, or in glasses in water, but few are aware that they can be grown better in moss, (*Sphagnum*), than in either. This moss is found in many of our swamps, and is largely used by florists and nurserymen for packing plants to send to a distance by mail or otherwise. Its light sponge-like qualities are such as the roots of Hyacinths and other bulbs delight to revel in, and in which they grow luxuriantly. The moss may be either used to fill pots, window-boxes, or wire, or other baskets. A wire basket in which four or five different varieties of Hyacinths are planted, presents a very attractive appearance when suspended in a window or other part of the room. In filling the moss into the pots, boxes, or baskets, it should be pressed moderately firm, and the Hyacinths planted with one-third of their thickness above the surface. After planting, the moss should be watered sufficiently to thoroughly saturate it, and after the surplus water has run off, the baskets or other receptacles are to be placed away in some dark cool place, such as a cellar, or dark closet, where the temperature does not exceed 50°. In five or six weeks after planting, the moss will be found to be filled with roots, and the bulbs may then be taken from their dark quarters into the light; and if kept in a temperature of 60° or 70°, they will flower abundantly in three or four weeks after; the moss must be kept moist at all times. The flowers of the Hyacinths will be greatly increased in size and brightness of coloring, if they are watered with guano water once a week. This should be very weak; one pound of guano to 15 or 20 gallons of water, or a pound of sulphate of ammonia may be used instead of the guano, in the same quantity of water. The advantage of using moss for Hyacinths, etc., is in its lightness and cleanliness in handling. The wire baskets, especially when filled with moss, present a much more pleasing appearance than they would if filled with soil. The bulbs may be planted from October to January, and by planting at intervals of two or three weeks, a succession of bloom may be had from January to May.

The Horned-Poppy as a Bedding Plant.

In many of the ornamental beds at the Centennial Exhibition, in those planted by the Commission, as well as those of exhibitors, *Centaurea gymnocarpa* has been largely used for a white or gray. This was an unfortunate selection; though no plant is more desirable for its color, or more graceful in habit, it has an unpleasant way of dying suddenly, without any apparent cause. In many of the beds referred to, this was used as an outer line, and where perfect nothing could be more beautiful, but in most cases the sudden defalcation of a plant here and there, left unsightly gaps, and no plants being in reserve to fill them, the effect was sadly marred. Quite the most satisfactory of the plants with gray foliage was the Horned-Poppy. This was introduced several years ago as *Glaucium corniculatum*. In Feb. 1872, we gave an excellent engraving of the foliage under this name, but when the plant flowered with us, we found that it could not be that species, and we judge from the description, that it is *G. luteum*, a plant common on the sea coast of Europe, and introduced in a few places in this country. While its foliage is much coarser than the Centaurea referred to, and not nearly so pleasing a color, yet it has a robust character and

permanence that more than compensate for these defects. This was used in a number of the beds on the Centennial grounds, and we did not find a single failure. Being a biennial, it is raised from seeds; if these are sown early, and the plants kept on in pots, they may be had large enough to plant in the beds by the time the tender plants can be put out. It is quite hardy, and plants intended to furnish seeds may be left out all winter. They become ragged when allowed to run to flower, and are no longer fit for bedding purposes.

The White Everlasting Pea.

In January, 1874, we gave an engraving of the Everlasting Pea, *Lathyrus latifolius*, and described it as a capital perennial, producing its rose-colored flowers nearly all summer. What was said there in its praise, we here confirm. This year the white variety of this flowered with us for the first time, and nothing in the garden has given more pleasure. The white has larger flowers and in greater profusion than the ordinary form. It is a favorite in England to plant upon a bank; its trailing stems spreading in all directions to a distance of six feet or more. Like the original rose-colored, this may be trained to a trellis, but we think they show better when prostrate, and they may be allowed to run directly upon the ground, or if some fine brush be laid to make a low mound, they will soon quite cover it. The clusters have often a dozen large pure white flowers, and are excellent for cutting, as we have had them remain unchanged for a week in midsummer. The variety seeds much less freely, and will always be scarcer than the ordinary form, but it may be propagated by division.

Ferneries or Plant Cases.

As winter approaches we have, each year, a number of letters asking about the building and management of Ferneries or Plant Cases. Such a variety is included under these heads that it is difficult to give directions for making them in a brief article. The simplest thing of the kind is a bell-glass, or glass shade of any kind, placed upon a plate or saucer, and they are to be found all the way from this up to a bay window, enclosed by glass doors and fitted for the reception of plants. At the stores, very handsome affairs, consisting of a terra-cotta pan, and a large glass shade, may be had of various sizes; these are generally called ferneries. Others, consisting of a square or rectangular case, of black walnut or other wood, with glass sides, mounted upon a stand, and furnished with a zinc pan for holding earth, are generally known as Wardian or plant cases. The difference is only in form and size, their uses and management being the same. As a hint for others we may give our first experience with such a case. Having four small sashes, two were used for sides, and two for a pitched roof, the ends being made without glass. This was built upon a cheap table, furnished with a zinc pan from which a drainage tube, stopped by a cork, went through the table. We have had more costly cases since, but none that gave more satisfaction. Any contrivance in which plants can be grown, covered with glass to admit light, and at the same time keep the atmosphere within sufficiently moist, will answer the purpose. The soil best suited, is a mixture of leaf-mold from the woods, common garden soil, and clean sand. The plants may be expensive or not, as one wishes; a case may be filled with plants from the woods; mosses and lycopodiums all do well; the few evergreen ferns, Trailing Arbutus (*Epigæa*), Twin-berry, (*Mitchella*), Rattle-snake Plantain (*Goodyera*, with beautifully variegated leaves and an unpleasant name), the Princess Pines (*Chimaphila*) and others, may be selected to make a charming little "woodsy" garden. If one goes into exotics, there is a great variety of ferns, and selaginellas, the selection of which, by those not familiar with plants, may be left to the florist. Small Dracænas and Marantas, are useful, some of the variegated Begonias do well, as do the Peperomias, and other showy-leaved plants. A few bulbs of Crocus may be planted to make a variety. The earth should be well watered at planting, and the case be kept in the shade until the plants are well established, and then be placed at a window where it will have a plenty of light. Watering with tepid water, will be required, usually about once a month, but depending upon temperature; once in two or three days the case may be opened for a half hour or so, to air, and all decayed leaves should be removed. A case filled with ordinary greenhouse plants will do well in the usual temperature of the living room, which should be 15° or 20° lower at night than in the day; plants from the woods may be kept much cooler.

Mixing Things.—The Journal of Horticulture (London) gave some weeks ago an engraving which was fortunately labeled *Rhexia Virginica*, or we should never have guessed it was intended for our beautiful little *Rhexia*, or Deer-grass. The writer says: "Our figure represents a small *family* of plants said to be indigenous to the great continent of North America," and further along we read, that "they are a *race* of plants of great beauty," etc. Making our poor little plant both a "family" and a "race" is something we should hardly look for in a paper edited by such able men as direct the "Journal." We are glad to see that the attention that was given to North American plants early in the century, is being again revived in England, and we hope that our own flower-growers, finding that they are popular abroad, may learn that native plants have their merits as well as the exotics.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

How much Clothing is Necessary?

One person cannot decide for another. The comfort of the individual ought to settle the question. But sometimes the individual has become so demoralized in his or her instincts with regard to heat and cold, that the sensations at any hour are not a sufficient guide. When girls wore low-necked and short-sleeved dresses all winter, twenty years ago, they protested frequently, in the presence of brothers dressed in flannel and broadcloth, that they were quite warm enough. They would rather die than complain of their dainty shoes and be condemned to thicker soles. And die they did.

We must use common sense in the matter, and that bids us dress according to the weather—thinner in summer, thicker in winter, with varying degrees of thickness or thinness between. It bids us clothe our bodies somewhat equably throughout, not piling too much in one place and leaving other parts without sufficient protection. A chilly condition of the body is always attended with danger. If the surface of the body is unduly exposed to cold, the internal organs—lungs, liver, bowels, or some other organ or organs, upon whose action health depends—suffer in consequence. "Y." complains of not feeling well, thinks his liver is out of order, and wonders why, as his eating has been pretty regular, and not especially unwholesome. "J." thinks the dispensation not very mysterious, for "Y." dresses without much regard to the weather. In a hot spell he gets on just one thin unlined suit, and when the weather changes and fires are necessary at morning and at night, he still goes out to do his early work, adding only a coat, if anything, and leaving his lower limbs covered with only one thickness of cotton or linen. He is chilled, but he "can stand it." He is not going to "baby" himself. Because it may, perhaps, be hot for a few hours at noonday, he dresses himself for hot weather. The blood is chilled, and the vital force impaired. Sudden exposures to severe cold are not more dangerous to health than long-continued chilliness, which thoughtless persons consider not worth minding.

There is about as much danger in excess of clothing as in a deficiency. Too much warmth debilitates the system. Children should not be kept in a perspiration; this enfeebles the skin, and makes a person "easy to take cold." The circulation is quicker in children than in adults, and they can keep warm more easily. If they persist in throwing off the bed-clothes at night, probably they are covered too warm, though grown persons sleeping with them may not suffer in the same way. Little children need more clothing in the daytime than in the night, (as compared with grown people,) because they are nearer the floor, often sitting upon it, or upon low seats, while their beds are usually as high as any others. The thermometer shows a great difference between the temperature of a room at the floor and at three or four or more feet from it, as warm air rises, and cold air sinks.

Cutting Patchwork.

Bed quilts are not yet out of fashion, and I think it will be a long time before women will like to give them up entirely. For a person of leisure there is considerable pleasure in making a large and useful bed-spread out of bits of cloth which seem too small to be of use, though strong and pretty. There is no good excuse, however, for buying new cloth for the purpose of cutting it into bits, to be sewed together again as a bed-quilt. Patchwork has no good right in the world, unless it comes to save the pieces which would otherwise be wasted, or for the sake of saving precious little scraps which we would like to put into some durable form. I hear of a grandmamma who is at work upon a bed-quilt which is to contain pieces of all the little dresses her first grandchild had worn "up to date,"—to be a present to the child, and one which will be a kind of family treasure, no doubt.

I had grown to have a kind of contempt for these parti-colored bed quilts, as monuments of the folly of women who do not know the value of time; but my own little ones have such a lively interest in the different kinds of calico in the old bed-quilts, and so much pleasure in making "blocks" of pretty calico worn by friends and acquaintances, that my "growing contempt" is already out-grown. I like the patch-work better than most kinds of fancy work after all, and I can sympathize with any one's enthusiasm over a bed or cradle quilt made of tiny scraps of silk, each with a history, provided the quilt has been pieced as a rest or recreation to a mind engaged in fatiguing studies, and not as an engrossing business.

Patch-work is always legitimate work for children, invalids, and grandmothers. Little fingers learn to sew more easily on the short seams of a block, than on ordinary garments. But I started with the intention of suggesting that patch-work should be cut by a tin or stiff pasteboard pattern, and not by one of thin paper, or by placing one block by another.

Chickens Fit to Eat.

Don't imagine that it makes no difference how your Thanksgiving chickens have been brought up. Don't suppose that they will be good anyhow. Chickens have been carefully dressed, deliciously stuffed, assiduously basted, and tenderly roasted, and yet they were not fit to eat. There was a flavor about them that no soda rinsings could cleanse and no seasonings conceal. These were chickens that had picked up their living around pig-sties and other unclean places.

A chicken may be spoiled in dressing it to cook. If killed with a full crop, and allowed to lie for hours before it is "drawn," (or relieved of its internal organs), it gets an unpleasant flavor. Fowls should be caught and shut up without food for twelve hours or more before they are beheaded. Then the crop and intestines will be empty, and the task of picking and dressing it will be greatly lessened. Old fowls are not necessarily tough—only cook them long enough. They are more tender twenty-four hours after they are killed, than if eaten immediately.

Graham Custard Pie.—Funny and good. One quart of milk, two eggs, half a cup of sugar, half a cup of graham flour. Beat the eggs and stir all together. The graham flour sinks to the bottom of

the pie dish, as the custard bakes, and forms a good crust. It may appear to be soaked, as custard pie crust often is, but it is not in the least "clammy." It dissolves easily in the mouth, and is entirely digestible. A pleasant cream pie is made from the same recipe, leaving out the eggs, and using creamy milk or thin cream.

SWEET MILK GEMS.—To my taste there is no more delicious graham bread than gems mixed with sweet unskimmed milk, without salt or baking powder. Like water gems, they require a *hot* oven, though this is not quite so essential for any form of bread mixed with milk. As there is no soda, or yeast, or baking powder to make them light, all depends upon the thorough stirring together of the flour and water, and a quick, steady baking. Skimmed milk is little better than water.

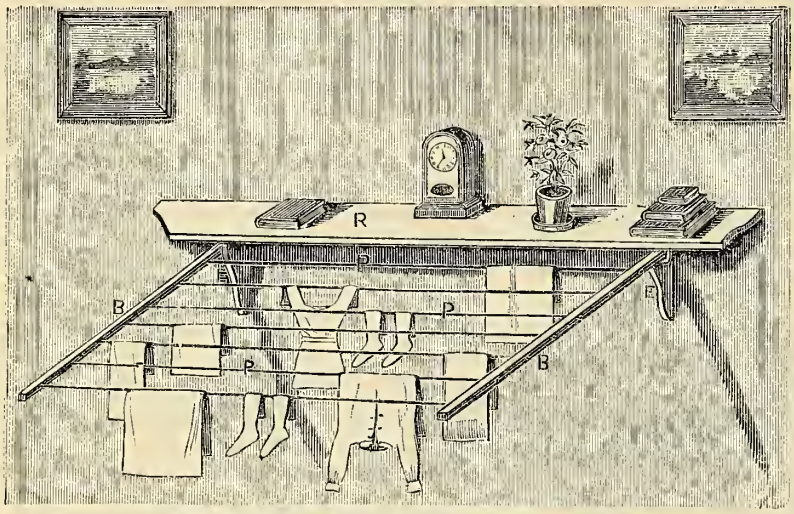


Fig. 1.—CLOTHES DRYER ON MANTLE SHELF.

One Way to Remove Grease-Spots.

I saw a lady dressed in a beautiful blue silk, with a fresh spot of grease made upon the skirt by her little child. "I can take it out with soft bread crumbs," said she. Then she told how successfully she had removed worse spots, made by butter, on the same dress. She rolled or softly rubbed freshly cut (but not new) bread over the place, one fresh piece after another, each one soaking up a part of the oil, until the place was left clean, she said.

A lady who was present when this was told, said that she now understood better the philosophy of a direction given her for extracting a very bad grease spot from a carpet. She was told to make a kettle of common mush, and put a thick plaster of it over the grease-spot, and a second one after the first had dried and was removed. She was told then to wash it with clean suds, and was assured that the grease would be extracted. She did not try this recipe, but you can if you like. Or you can provide yourself with a much praised

CLEANSING FLUID. — Dissolve four ounces of white castile soap in one quart of soft water. When luke-warm, add four ounces of water of ammonia, and one ounce each of ether and glycerine. Bottle the mixture without delay, adding more water if it grows hard with keeping, or on account of cold. The ammonia, ether, and glycerine can be measured and mixed by the druggist.

Some Features of Comfortable Homes.

It seems impossible to secure that great desideratum—a "cozy little house with a good many large rooms." So take your choice. If you can not build a large house, choose between rooms large and few, or many and small. Either extreme is uncomfortable at times, but there is a middle course. One would like at least one room large enough to look hospitable toward a piano, and comfortable for large family gatherings or sociables, allowing a chance for different conversational groups, and for childrens' games. Folding doors between sitting-room and dining-room, or between any two rooms of nearly equal grade, make it possible to turn two small rooms into one large apartment when desired.

Large sleeping rooms suggest better ventilation than small ones, but if the large room must be used for several beds, it had better be partitioned off if possible, so as to secure needed privacy to individuals. Emerson says somewhere, that often the chief advantage of college life lies in the separate fire and light which it affords the boy who could never have these at home. The needs of a growing family should be considered in building a house—pleasant private rooms for the children as soon as they are old enough to appreciate and profit by them.

Generally, sleeping rooms should face the east, rather than the west. The morning sun then looks in to sweeten the bedding and purify the room, and eastern rooms are more comfortable on summer evenings. It is a great convenience to have access from the sleeping room to eastern piazzas or balconies, where bed-clothes may be easily aired and sunned. A little forethought in the arrangement of chambers, may secure good ventilation through all of the rooms from all points of the compass, by placing doors and windows with reference to this. Rooms not in constant use, and left open during the day, may thus get the benefit of changing winds. Small windows through closets into adjoining rooms, will aid in this matter, greatly to the advantage of the closets. Every sleeping room should have its own closet, provided with some means of ventilation. In planning a sleeping room, always look out for a good place to set a bed, without interfering with doors or windows. See that there is a chance for ventilation without a draught of air across the bed, or upon its head. Study how the different doors may open, so as best to economize space. Sometimes two or three doors open into each other in a most uncomfortable manner.

For a summer afternoon comfort, a piazza or generous porch—even a board platform without a roof—is much to be desired upon the east side of the house, without reference to the way in which the house fronts. In winter, south windows are delightful, admitting full floods of sunshine. Bay-windows, French windows, triple windows, double windows—whatever you like—but do not forget the main idea of a window. You wish to admit light and to give a good outlook. So let the frame-work be subservient to the clear glass, so that your picture, as you look from the window, may have as little obstruction as possible, even in winter, when sealed against outside cold. In summer, it ought to be capable of opening wide, with a window-awning, perhaps, if no shade-tree protects it sufficiently from the sun's fierce rays; but in cold weather you need all the sunshine it can admit. A fire-place is another necessity for the sitting-room, where wood is plenty. A pantry should have a cool corner to itself, looking to the north, if possible, or to the east. Beauty of exterior is certainly of great importance, but I do not believe it lies in this or that style of architecture or trimming, so much as in fitness to its surroundings, and in honest expression of the desire for a comfortable home, expressed with good taste and with modest deference to the taste of the most cultivated people.

Baby Jumpers and Crooked Legs.

A woman who has used a baby jumper, such as I described a few months ago, asks me if I suppose it was the cause of her childrens' bandy legs. Two who have used it most, she says, have become more or less misshapen in their limbs. If they had not both been very fat babies, and so early walkers, I should mistrust the jumper more than I now do. I think there is always danger of deforming the legs of children when they are encouraged to stand and walk very young, and this danger is increased if a child is quite fleshy. Lately a woman wrote me that her baby had crooked legs, owing to his having learned to walk so young, so that they were obliged to get braces for his legs. In this case no jumper had been used, and so it has been in all other cases I have known except the one mentioned.

Speaking of jumpers, a lady in Ohio writes me about hers. She uses no spring pole, but has a hook "such as lamps are suspended by," she says. This is fastened into the ceiling, and a common bed spring attached. The rest of the jumper is made after the description given in these "Topics" not long ago. It seems to be a great success, and here is one chance to observe the effect upon baby's limbs; for my correspondent writes that her baby is so fond of his jumper that he eats in it, goes to sleep in it, and has even remained happily in it three hours at a time.

A Clothes Dryer for a Mantle Shelf.

BY L. D. SNOOK, YATES CO., N. Y.

In most houses the stove has taken the place of the open fire, and though the fire-place may be permanently or temporarily closed up, the mantle shelf originally built with it, is found quite too convenient to be abolished with the fire-place. Indeed, so desirable is a shelf of this kind, that recent houses built with reference to the use of stoves only, are almost always furnished with mantle shelves to the chimneys, though there are no fire-places below. This shelf, besides being useful to hold lamps and other things, may be converted into a convenient clothes-dryer. The great number of portable clothes dryers that have been patented, shows that there is a demand for such things. However objectionable it may be to dry clothes in the house, there will be occasions when it is necessary to do it, and the simple arrangement here given will answer quite as well as a more expensive patented one. The dryer in use is shown in figure 1; *B*, *B*, are two strips of wood, two or three feet long, as may be desired, and 1¼ x 1 inch at one end, and tapering to 1 x ¾-inch at the other. At 4 inches from the shelf, and every 4 inches towards the smaller ends, small holes are bored, through which to pass the lines, *P*, *P*. The manner of attaching the arms to the shelf, is shown in figure 2, which represents one of the brackets into which two small iron hooks, *H*, *H*, are driven in such a manner that when the arm, *B*, is inserted, it will fit snugly against the hooks, and also against the under side of the shelf. In case the shelf has no brackets, the arms may be supported by means of iron staples, made of the proper shape and size to fit the arm, and driven into the lower side of the mantle. When not in use, the arms can be removed, and the affair rolled up to occupy a very little space.

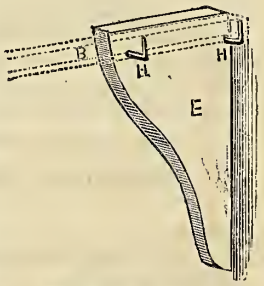


Fig. 2.—BRACKET.

How Candles are Made.

It seems probable that we shall have to go through a period when every economy must be practiced. Money is not and will not be so plentiful as it has been when it was made of paper, and printing presses were used to "coin" it. Many of the little economies which were formerly common in farm houses, will come in fashion again, and the use of home-made candles in place of "store" candles will return. Some young housekeepers never knew how candles were made, and would like to learn, while some of the older ones, who have forgotten, wish to be reminded. If clear tallow is used, the candles will crack and break. This is because it is too hard, a quality depending much upon the manner in which the animal has been fed. Dry food,

such as hay and corn, produces very hard fat, while with grass, turnips and linseed meal, the fat is softer, and will not crack when made into candles. For this reason summer-made tallow needs no addition to soften it, but winter tallow should have one-eighth part of lard added to it to make it more suitable for candles. The easiest manner of making candles is to melt some tallow in a shallow, broad pan, such as a 10-quart milk pan, and having some wicks prepared to string them upon a wire or a round stick (see fig. 1), and holding them over the pan of tallow, which is kept warm, but not hot, upon the stove, to dip up the fat with a spoon, and pour it down the wicks a few times, until some of the tallow has hardened upon them. Several of these sticks full of wicks are prepared, and are taken one by one, and treated to a coating of tallow. As each one is greased, it is placed upon a frame, made as shown at figure 2. The wicks are cut to the proper length, which is about 18 inches, and doubled. They may be measured to the proper length on a very simple frame, made by setting a rod upright at the end of a piece of board, a foot long, and fixing a bent wire at a proper distance from the rod, (see fig. 3.) The wick is doubled around the upright rod, and as it is held on to the wire, it is cut with scissors by some one who helps. The wicks are left upon the rod, until a quantity are ready, when they are put upon the sticks, as at figure 1. Another and better plan is to make a narrow wooden box with a lid, and a sheet-iron or a tin bottom, turned up an inch or two, and tacked close (fig. 4). This is set upon the stove, and the tallow melted in it. It is deep enough to permit the wicks to be put into them the whole length. The wicks strung upon the sticks are dipped into the tallow three or four times slowly, until no more fat will harden upon them, when the bottoms of the wicks are touched upon the sloping lid, to take off the drip, and the stick full is hung upon the frame to cool, (fig. 2). Another is immediately taken, and treated in the same manner, and so on, until the first one comes around again. When there is enough tallow upon the wicks, the candles are finished, and appear as at figure 5. These are the common dip candles. The molded candles are made by pouring the tallow into a frame of molds, made of tin, as at figure 6. The wicks are cut the proper length, strung upon thin sticks, and are inserted into the molds, the ends being drawn tight, and a knot is made to hold them in their place. They are set exactly in the center of the molds. Then the tallow is poured into the molds, until they are full, and they are hung up in a cool place for the candles to harden. The tallow shrinks as it cools, and the molds are made slightly tapering, so that it is easy to draw the candles out by the stick, on which they are strung. The candles may be tied together by the loops at the ends in bunches of six or eight, and hung up in a cool, dry place. Candles thus made need to be snuffed when burning, which is a troublesome thing to do. If the wicks are platted and flattened out before being used, they will bend over to one side when burned, and as the charred portion becomes exposed to the air outside of the flame, it wastes away, falls, or is carried off by the upward draft. The guttering of candles is caused by the tallow being too soft, or the wicks being twisted too hard; in either case the melted tallow is not absorbed by the wicks as fast as it becomes fluid, and so flows over the edge.

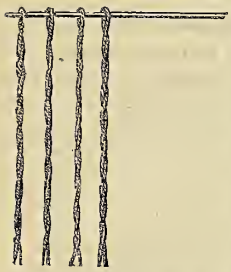


Fig. 1.—CANDLE WICKS.

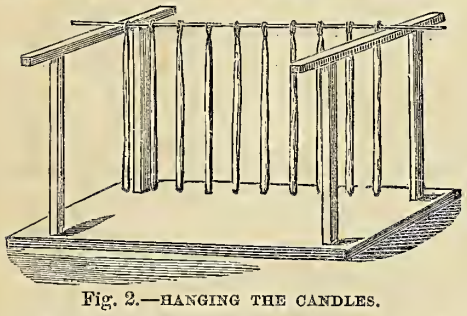


Fig. 2.—HANGING THE CANDLES.

Fig. 3.—WICK MEASURE.

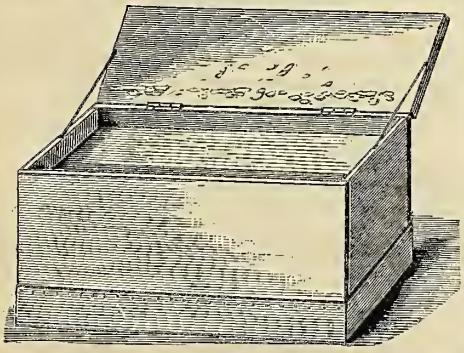


Fig. 4.—BOX FOR MELTING TALLOW.

Fig. 5.—A DIPPED CANDLE.

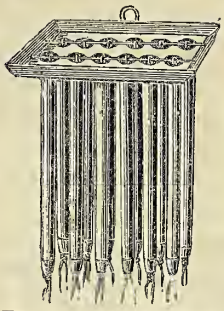


Fig. 6.—CANDLE MOLDS.

MENDING RUBBER BOOTS AND SHOES.—Several have asked us how they could repair worn-out rubbers. At the depots of rubber goods in cities, cement, made of dissolved rubber, is sold for this purpose in small tin boxes. Unless one can procure this, it is not worth while to undertake to do the mending, nor is it likely to be economical with this, unless one has considerable such work to do, as the cement, soon after the box is opened, becomes hard and useless. Rubber can be dissolved by those who will be at the trouble and expense, but this is one of the things that will not pay in a small way, as those living at a distance from cities will find it very difficult to procure the articles, and when they are at hand, unless one is used to working with such materials, they are dangerous to handle, on account of their inflammability. The ordinary shoes contain but a very small proportion of rubber, and are useless for dissolving to make a cement, pure gum, as it is imported, must be used. The best solvent is the *bisulphide of carbon*, a liquid that is very volatile and dangerously inflammable, and has a most offensive odor; this dissolves the rubber in the cold; the gum should be cut into thin strips, and placed in the bisulphide in a very securely stopped bottle; it swells up greatly, and makes a thick sticky mass, from which, when exposed to the air, the liquid soon evaporates, leaving the rubber in its original state. No rule is given for making the cement, but it should, if too thick, be thinned with more bisulphide, to work with a brush. In applying patches, both those and the shoes should be clean, and the patch kept under pressure until the cement dries. All work with this should be done at a distance from a fire, a lamp, or other source of danger. Chloroform also dissolves rubber, but is expensive; benzole, naptha, and similar liquids, which require the use of heat, are too dangerous, and they leave the rubber sticky. While we believe in small economies, there are some which cost more than they save, and are not to be commended. We think the cheaper way will be to purchase only the best rubber boots and shoes, use them carefully, and when they are worn out get new ones.

BOYS & GIRLS' COLUMNS.

Pigeons and Pigeon-Houses.

Boys and girls generally like to have some living pets; boys often take to pigeons, but we see no reason why girls should not keep pigeons too. As there are objections to nearly all pets, there will be some to pigeons, especially on farms and in country places generally. Of course no right thinking boy or girl will wish to keep pigeons, or other pets, that are likely to be an annoyance and do more harm than good, and in all such cases the parents should be consulted, and the matter properly considered. Pigeons will do some damage, and if the father is willing to put up with this, for the sake of gratifying his children, then it is all right. Then all live pets must be fed, and there comes the question of food, an important one with pigeons, as they are hearty eaters. Pigeons are so fond of peas that they will pull up the sprouting crop, or even get at the peas before they come up, and leave very few to grow. In England they soak the peas and roll them in red-lead, and it is said that the pigeons will not eat them. The birds will go for the peas in the pods, will eat beans, will visit the ripening grain, and you may be sure they will not come away with empty crops. Much of the mischief that they might otherwise do can be prevented by regular feeding near their house, and this will keep them from straying and learning bad ways. These are the objections; on the other hand is the great beauty of the birds, especially of some of the fancy breeds; they are very domestic, and it is pleasant to see them about the grounds. Then the common pigeons are profitable as food to use in the family or to sell. An old pigeon is rather dry eating, but the young birds, or squabs, are most excellent, and bring a good price in the market. As they breed about every six weeks, always laying two eggs, the birds increase rapidly, and may be made profitable by boys who live near a market for squabs. We have had several inquiries of late from boys for directions to make a pigeon-house. As pigeons may be kept in any number, from a single pair up to a large flock, the houses may be of various sorts and sizes. We have seen a common soap

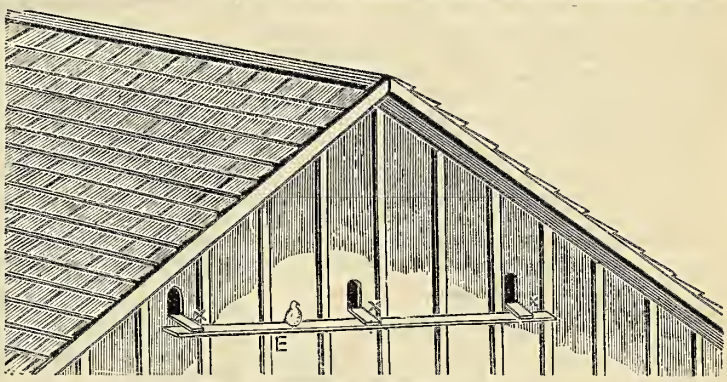


Fig. 1.—OUTSIDE OF PIGEON HOUSE.

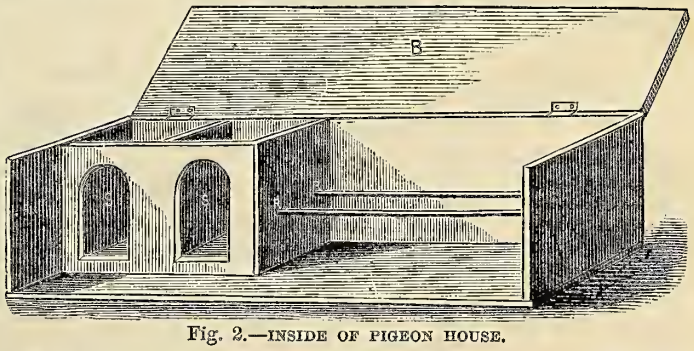


Fig. 2.—INSIDE OF PIGEON HOUSE.

box fitted up as a house for a pair, and a barrel, divided on the inside by partitions, holes made in the side for doors, fitted with a straw thatched roof, and set upon a strong pole, as a house for several pairs. Almost any boy can contrive something that will answer for a pigeon-house, but there are some houses that are better than others, and those which are the safest, and the most com-

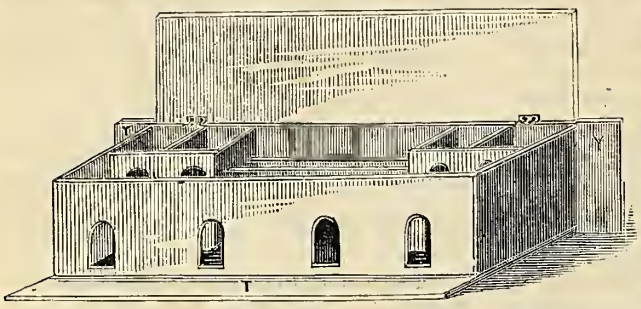


Fig. 3.—PIGEON HOUSE FOR OUTSIDE OF A BUILDING.

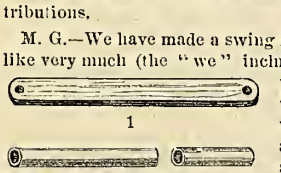
fortable for the birds, and at the same time can be got at by the owner, are the best. In former volumes we have given some ornamental pigeon-houses, and we now give some very simple and practical ones from drawings by Mr. L. D. Snook, Yates County, N. Y. It is on many accounts better to have the pigeon-house inside of a shed, or other building, and the first two illustrations are placed inside, with openings in the side of the building to allow the birds to pass in and out. In figure 1 is shown the manner of attaching an alighting-board to the side of a building. The strip *E* should be about 3 inches wide, and nailed to walks *X X X*, six inches from the side of the building, to allow the droppings to pass freely to the ground. Figure 2 gives the interior of the pigeon-house and the arrangement of the roosts, nests, etc. It is a long box, one foot high, six feet long, and one foot wide, with a hinged top, *B*. One side of the box is left open, as this will go against the side of the building, where it should be securely fastened. In figure 3 is a view of a cheap portable pigeon-house, that will answer quite as well as a more costly one. This is one foot square, and from 6 to 8 feet long. This house is intended to be fastened to the outside of a building, or it may be put up inside of an open shed. The board or boards forming the back project four inches at each end, as seen in the engraving; these projecting ends allow the house to be nailed or screwed up wherever it may be desirable. To provide an alighting-place, the bottom board projects four inches in front, as shown at *T*. Like the other, this has a hinged lid to allow the inside to be examined and cleaned out. Pigeons should be fed regularly, morning and night, they will eat all kinds of grain, peas and beans, and the house crumbs; they should always be fed in the same place, and called to their food by means of a wooden or tin whistle, or some such signal; they will soon learn the meaning of the sound, and can be called in at any time if they are anywhere within hearing.

Aunt Sue's Chats.

A. F.—We have more *cross words* and *numerical enigmas* than we can ever publish. Good *charades* or *riddles* in rhyme would be acceptable.

MANGIE.—Answers must always accompany puzzles when sent to us. We never desire any but original contributions.

M. G.—We have made a swing for our baby, which we like very much (the "we" includes the baby). And I will tell you just how we went to work. We went to the woods with a small saw, and cut some nice, straight stalks of sumac, about the size of a man's thumb; brought them home and sawed them into lengths of four inches and two inches (figs. 2 and 3). Peeled off the bark, pushed out the pith with a gimlet, and selected four of the nicest and whitest of each size. Then we sawed a piece of board (half an inch thick) 12 by 12, and bored a large gimlet-hole in each corner. This board we covered with blue rep (calico would do, you know, but we had the rep in the house), after wadding it pretty thickly with cotton-batting, and fastened it down by tacks underneath (fig. 4). Then we cut some laths into pieces 12 inches long, whittled them smooth, and bored a large gimlet-hole in each end. Eight pieces like figure 1. Then two pieces of *marline* (a very coarse, well tarred string), each six feet long, and the swing was ready to be put together. To do this, we took one end (of one of the pieces) of *marline*, passed it down through two pieces of lath (fig. 1)—through No. 3, through two more pieces of lath—through No. 2, through the seat (after having punched a hole with the scissors through the blue rep over the hole already bored in the wood); passed the marline under the seat to the other hole on the same side of the swing; up again—through the seat—through No. 2—through two laths (having the under and over one uniform with the first stringing on the side already done, see figure 5)—through No. 3—through two more laths. That completed one side. We did the same to the other side of the swing; then fastened the ends of the marline with knots, as in figure 6. Through these knots we passed a stout stick (it was the handle of the hay-fork in the barn, to speak honestly), found a support for the stick, pushed the laths and sumacs up



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Figs. 1, 2, 3.—SLAT AND STICKS.

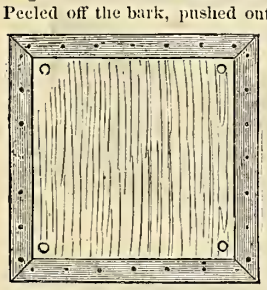


Fig. 4.—BOTTOM BOARD.

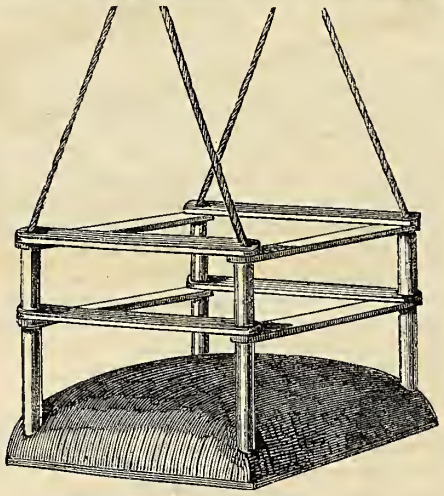


Fig. 5.—THE SWING.

the strings, tucked in the baby, pulled down the "fences" to keep the cherub in, and I wish you could have seen the happiness beaming in the face of said "cherub" as she swung for ever so long, with a little pillow at her back. Such a swing is very easy to make, and no family with a baby should be without one.

Fig. 6.—HANGINGS.

GUS. W.—Your questions should be addressed to the publishers, and not to *Aunt Sue*.

TOMMY.—Your question comes too late this month for discussion.

H. L. P.—I should think the answer to the rebus you send is—"Handsome faces cannot escape washing." The riddle is an old English one, and very good—

"Those who have me do not wish for me;
Those who have me do not wish to lose me;
Those who gain me have me no longer."

Answer: A lawsuit.—Here is another paradoxical one for you to guess:

"Formed long ago, yet made to-day,
I'm only used while others sleep,
But few would like to give away,
And none would wish to always keep."

Those Centennial Trees.

If the Centennial tree or trees were not planted last spring, do not forget them this fall. Recollect that it is the Centennial year until the end of December. Trees may generally be set in the fall, as well as in the spring. Each boy and girl, whose parents own the place on which they live, should put out a tree this year, to be known as the Centennial tree; if there are any little ones, too young to have a hand in it, you older boys should plant a tree for each of them. In different parts of the country you will choose different trees. You must ask some older person what will be best, and how to get it. For most places the Elm is best, and if taken from the woods, cut the branches off, and leave only a pole; it will be much surer to grow, and will look much finer in a few years, than if they were left on. Hickories, Oaks, Chestnuts, and many others are difficult to transplant. Besides the Elm the Hard or Sugar Maple, and the White Ash are good trees, and transplant easily. But we have not space to say more about it. Ask your parents, and follow their advice. If possible, plant a Centennial tree. ... The above was intended for last month, but as will sometimes happen, was crowded out. It is not too late yet, in all but places far northward, to plant trees, provided we have a mild autumn. But you must ask the advice of older persons.

Aunt Sue's Puzzle-Box.

NUMERICAL ENIGMA.

I am composed of fifteen letters:
My 6, 9, 5, 7, 14, is a boy's name.
My 15, 10, 13, 12, is a destructive worm.
My 1, 8, 2, 3, 4, is a blemish.
My 11, 7, 3, 4, 9, is a river in Europe.
My whole is a city in Europe. S. L. P.

CROSS WORD.

My first is in May but not in June,
My next is in star but not in moon,
My third is in bee but not in sting,
My fourth is in twine but not in string,
My fifth is in limb but not in tree,
My whole is a lady; pray who is she?
BELLA C. E.

PI.

A mollnites nad het amhnu earth
Ear redvin reev norud,
Fi heyt veah nonight seel ot dring,
Heyt stum hemvestles eb gunrod. SUE K. SUDDS.

SYNCOPATIONS.

1. Syncopate something very light and leave a relative.
2. Syncopate a vehicle and leave an animal.
3. Syncopate something used for jewelry and leave something used for cooking.
4. Syncopate something an animal has, and leave the animal.
5. Syncopate a mason's tool and leave a toilet article.
BEN.

DIAMOND PUZZLE.

1. Part of a building. 2. A fragment. 3. A Governor. 4. A learned Italian. 5. Cold. 6. A color. 7. Found in every house. XIPP.

SQUARE REMAINDERS.

Behead three words having the following significations, and the remaining letters will form a square.
1. An animal. 2. Food. 3. A boy's nickname.
ITALIAN BOY.

HIDDEN TRANSPOSED FRUITS.

1. Helen said the fare appeared very high.
2. Ned, gold is at par; get all you can, honestly.
3. The barren ice quits the shore.
4. Harry, Berlin is the capital of Prussia.
5. The niche appears high in the wall. C. A. SPROAT.

CHARADE.

My first, as a verb, is right grievous I trow,
When you and your lover must do it;
On my second, when walking, pray don't stub your toe,
Lest you painfully find cause to rue it.
My whole is a bird, and 'tis first-rate to eat,
But don't shoot it out of its season;
There's a law to protect it,
And prithee respect it,
For 'tis made with a very good reason. CHARLIE.

PUZZLE.

One thousand you divide by one;
'Tis very easy to be done;
Though many actions you have hid,
'Twill show you all you ever did. F. W. G.

A CITY.

One-ninth of Lewistown. One-sixth of Toledo. One-eighth of Wheeling. One-sixth of Albany. One-sixth of Boston. One-tenth of New Orleans, and one-eighth of Brooklyn, form a city. JOHN W. WHEATLEY.

CONCEALED SQUARE WORD.

1. I like, very much, to see that fabric on chairs.
2. Bridget, will you please to give Tom a handkerchief.
3. I wish you would tell Anna I admire her exceedingly.
4. The music has entirely cured my sadness.
5. She had established excellent rules in the household.
SPHINX.

TRANSPOSITIONS.

(Fill the blanks with the same words transposed.)
1. He had to take —— of the —— home with him.
2. He received that —— in an accident on the ——.
3. In order to —— Jack, we gave him ——.
4. Don't rub that picture with your —— or you will —— its beauty.
5. He said he would —— when it got down to ——.
NIP.

ANSWERS TO PUZZLES IN THE AUGUST NUMBER.

DOUBLE ACROSTIC.
Daisy, Aster.
D— or —A
A— mo —S
I— nle —T
S—tepp—E
Y— ou —R

CONCEALED SQUARE WORD.
E N A C T
N I T R E
A T L A S
C R A F T
T E S T Y

TRANSPOSITIONS.—Tame, team, meat, mate.

NUMERICAL ENIGMAS.—1. Alfred the Great. 2. Never lie idle.

PI.—A horse bit his master; how came it to pass?
He heard the good parson say "All flesh is grass."

DIAMOND PUZZLE.—
F
MAT
MISER
FASHION
TEINT
ROT
N

CROSS WORD.—Trout Run.

ANAGRAMS.—1. Absconded. 2. Obliterates. 3. Terpsichorean. 4. Obeisance. 5. Absurdity. 6. Absolution. 7. Abstractedly. 8. Technicalities. 9. Malediction. 10. Assemblages.

DECAPITATIONS.—1. Dover. 2. Aden. 3. Bear. 4. Wheel. 5. Bass.

NAMES OF POETS.—1. Poe. 2. Dante. 3. Milton. 4. Young. 5. Swift.

PUZZLE.—Pudding.

HIDDEN FLOWERS.—1. Verbena. 2. Adonis. 3. Spirea. 4. Lily. 5. Violet.

NO. 156. GEOGRAPHICAL REBUS.—Oxford, Reading, Ramsgate, Pekin, Brooklyn, Stonington, Rio de la Plata, Canary Islands, Portugal, Europe, Cuba, Newfoundland, Cape Horn, Bear Lake, Tyrol, Kansas, Japan, Ascension Island.

ANSWERS TO PUZZLES IN THE SEPTEMBER NUMBER.

CROSS WORD.—Carnation.

NUMERICAL ENIGMA.—*American Agriculturist.*

ANAGRAMS.—1. Companion. 2. Mormons. 3. Charade. 4. National. 5. Albatross. 6. Prophesied.

DOUBLE ACROSTIC.
Draco, Solon.
D—uma—S
R—ond—O
A—be—L
C—asc—O
O—nio—N

CONCEALED SQUARE WORD.
MART
AREA
REAM
TAME

HOUR-GLASS PUZZLE.
DISERTITUDE
DISPARAGE
WALLACE
ELLIS
BAN
H
GAB
ESSEX
LANSING
MINNESOTA
SUSQUEHANNA

CHARADE.—Canterbury-bell.

CONCEALED STATES, COUNTRIES, ETC.—1. Nevada. 2. Idaho. 3. China. 4. Canada. 5. Oregon. 6. Spain. 7. Asia.

PI.—Who in a house of glass would dwell
With curious eyes at every pane?
To ring him in and out again
Who wants the public crier's bell?

GIBBERISH.—Doing nothing is doing ill.

METAGRAM.—Heart; in which may be found "earth, art, ear, hat, hate, hart, heat, rat, rate, rath, tar, tare, tea," and "tear."

DECAPITATIONS.—1. Gloom, loom. 2. Fright, right. 3. Factor, actor. 4. Flame, lame. 5. Flaw, law.

DROP-LETTER PUZZLE.—How doth the little busy bee
Employ each shining hour,
And gather honey all the day
From every opening flower.

Thanks for puzzles, letters, etc., to Addie A., Eddie L. M., Gertie S. T., I. F. O., & A. B. C., Albert C., Sydnora, Amy and Belle.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

The Doctor's Correspondence.

In the first letter I take up is a question

ABOUT SPIDERS AND THEIR WEBS,

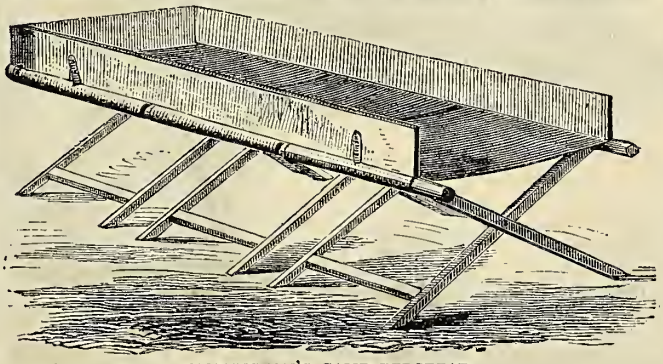
which comes from Arkansas; the writing does not look like that of a boy; and if I make a mistake in putting his answer among those to youngsters, he must excuse it. He asks: "How does a spider get the first web from one tree to another." In attaching their lines to a distant object spiders depend upon the wind; they let go a long thread, and trust to a favorable breeze to waft it to the desired point, or near it; the first line being laid, the spider then goes along it carefully and strengthens it by adding other threads to it as it goes....Willie K., in Kentucky, asks about

WATERMELONS AND BULL-FROGS.

Not that he wishes to know the same thing about both. He wishes to know how to tell when a watermelon is ripe. I can come very near being sure every time, by knocking on the melon with the knuckle; the sound given by a ripe and an unripe melon is quite unlike, and can only be learned by practice. If you put your hand on a melon and press down upon it firmly, it will give a cracking sound if quite ripe. It will be too late for you to try your skill this season, but I can not keep your question over until the next watermelon crop....I believe that bull-frogs are caught for market by means of a hook and line. A pole is used with quite a short line and a hook baited as for fish, or a bit of red flannel. The boat is pushed along slowly, and as the frog sits upon the water plants or elsewhere, the bait is held just in front of its mouth; the frog pretends not to see it, but all at once makes a sudden snap and is caught.

RELICS OF WASHINGTON.

John W. A., an Ohio boy, who has been to the Centennial Exhibition, wishes to know if the articles shown in a case as having been owned and used by Washington, are genuine. I feel quite sure that they are, as the history of most of the things is well known. They have been for many years on exhibition in the Patent Office at Washington, though why they should be put there, among models of washing machines and cooking stoves, I never could understand. It is very well to show Washington's camp-furniture, as it shows how simply the great general lived. In these days, a captain or lieutenant has more style about his camp table. It is well enough to show his swords and canes, and such things, but when it comes to hanging up the breeches, worn by the "Father of his Country," I think it is in very bad taste. We all know that he wore clothes of the fashion of his time, and to hang up his small clothes to the gaze of the public, does not strike me as quite proper. There are all over the country articles that were used by Washington, as during the long years of the war he was in many different places, and in many of the houses known to have served as his



WASHINGTON'S CAMP BEDSTEAD.

"headquarters" he staid months at a time; of course the owners of these houses carefully kept all the furniture and other things that he daily used, and left them to their children as articles of historical value, and there is scarcely an old city or town that does not contain something that is in some way associated with Washington. There are a number of these relics in the rooms of the N. Y. Historical Society, and one of our artists, who was there sketching some time ago, made a drawing of Washington's camp bed, of which we here give an engraving, that those who have seen his table furniture at the Centennial, can see that the great man's arrangements for his sleeping were no more luxurious than those for his eating.

WHAT IS A MEDLAR?

Master A. D., of Boulder Co., Colorado, has seen the Medlar mentioned in some nursery catalogue, and wants to know what it is. That's right Master Alfred; when you can't find out readily near home, don't give it up. The medlar is a near relative of the apple; the tree is about the size of an apple tree, with remarkably crooked branches; the flowers are much like apple blossoms, and white. The fruit is rarely over an inch and a-half across, and is flattened; it looks like a small apple that had not been finished—there is such a large scar where the blossom came off. You know that there is at the blossom end of an apple a little hollow place, which is generally hidden by the five parts of the calyx, or the green part of the flower, but you see it when you cut an apple through lengthwise. Thinking that other young people would also like to know how the medlar looks, I have had an engraving made of it. You see that this scar is nearly as broad as the fruit, and much too large to be hidden by the long and narrow points of the calyx, which you will see standing up around it. When you cut open an apple, you find the seeds, usually two, in five little cells or cases, lined with a very tough parchment-like material, all very near the center of the fruit. In the medlar the seeds are

THE MEDLAR.

in very hard and bony cases or cells, that seem like little nuts, and instead of being in the center of the fruit, they are at the top of it, and show at the large scar, and thus give the fruit the unfinished look I mentioned. When ripe the fruit is brown, and it is not fit to eat when first gathered, but is only eaten when it has become very soft and has begun to decay. I never tasted but one, and can not say that I was much charmed with it, but in Europe many persons are very fond of them, preferring them to the finest pear. There is no difficulty in growing them in this country, but trees are very rare. You may perhaps like to know the botanical name of the medlar; some botanists think it is only a species of apple, but others find it sufficiently distinct to have another name, and you will find it in most books as *Mespilus*, which is the ancient Latin name for the tree. Although this medlar story is too long, I must add that the Japanese medlar is a very different tree, and one that only fruits in the southernmost States....Here is Master Herbert, in Ionia, Michigan, who asks:

DO STONES GROW?

He has probably been set to work at picking up stones on the farm, and finding that the more he picked up, the more stones there seemed to be the next year, has come to think that there must be some truth in the belief that stones really grow. In stony parts of the country this is a very common belief, among much older people than Master Herbert, and who ought to know better, that stones do grow. It is one of the great distinctions between the organic beings, (plants and animals), and inorganic substances, (earth and rocks), that the first grow, while the second do not. Stones do not grow; whatever change happens to them is always in the other direction, to diminish them. All stones and rocks are constantly wasting away, some very much faster than others, according to their kind, but all, even the hard granite, wear away. The air, the action of water, freezing, the growth of minute plants upon them, and other causes, are constantly at work upon them. You will no doubt ask, "what becomes of the pieces?"—and a very proper question it would be, because I have told you at various times that nothing is ever destroyed, but that while matter may change its shape, it is all somewhere in the world. The pieces, which are very minute, make the soil, which is really only powdered rock, mixed with the remains of the plants that have lived and died upon it.

CRUCIBLES OR MELTING POTS.

In a talk about Iron and Steel, I mentioned that steel was melted in "a pot made of black-lead (such as pencils are made of) and clay."—One young man asks "can steel be *melted* in such a crucible as that?"—I suppose that my friend S. has a notion that because the substance is called black-lead, it is something like lead in respect to melting, etc. It is an unfortunate name, as there is no lead about it, but is carbon, with a very small proportion of iron as an impurity. Plumbago and graphite are other names for the substance, which is a mineral, found in various parts of the world. Though essentially the same as coal, it is very little affected by heat; it can not be made to burn, but under a very strong heat, and exposed to the air, it wastes away slowly; it can not be melted, and on this account is valuable in making crucibles. Certain clays also resist the strongest heat without melting; such substances are called *refractory*. Clays differ much in this respect, the most refractory being of great value for making fire-brick, such as are used for lining the inside of furnaces. Crucibles are made of fire-clay, but the larger ones are made of plumbago, mixed with one-quarter or one-third its weight of clay, the clay serving to hold the material together.

WHAT A LITTLE GIRL DID.

Probably no little child, since the world was made, ever caused such destruction as did a girl near New York on the 24th of September last. Sampson's deeds of strength were as nothing in comparison, and as to the giants and genii that we read of in the Arabian Nights and other stories, why the mere touch of this little girl's finger was more powerful than all these together. The touch threw out of place hundreds of tons of rock, that had been undisturbed since the world has been what it now is; it changed the course of a mighty stream, it threw up water in immense cascades, and it made the solid earth to so shake and quiver, that its tremblings were felt for a hundred miles. Great galleries, with arched rocky roofs, upheld by enormous pillars of stone, to make which took many men and steam engines several years, and which cost hundreds of thousands of dollars, all vanished at the movement of that little hand. Perhaps some of you have guessed that I am talking about the great explosion in New York harbor, and you have read that at one entrance to the harbor, called "Hell-gate," there are dangerous rocks, upon which many vessels have been lost, and which the Government at last concluded to remove. It took a long while, and much labor and money, to tunnel in under these rocks, but at last it was done, and thousands of pounds of dynamite, more powerful than gunpowder, placed in holes drilled all over the work; these

THE MILKMAN IN MALTA.—*Engraved for the American Agriculturist.*

charges were to be fired by electricity, and the arrangement was so complete that it needed but one finishing touch—a touch so light that it could be given by the finger of a little child. It was given—and the great work was done. It was a very charming ending, and as I read of what the little girl had done, I thought, not so much of the explosion, and the amount of rock removed, and the immediate work just there, but of the years of work, by hundreds of persons, that made it all possible. Without the steam-engine the work could not have been done; the many inventors and improvers of the steam engine, and the inventor of the drill working by compressed air, all helped; the discovery of glycerine, the making of it into nitro-glycerine, and then into dynamite, all had to be before hand; then there were a whole host of electrical discoverers and experimenters, who perfected the battery by which the explosive was fired. The firing must take place under water, which could not well have been done without gutta-percha to cover the wires, and this was furnished by the Malays and Ceylonese in the far East; the platinum for the wires that fired the charges was, no doubt, produced by half savages in the Ural Mountains of Russia—but it will tire you to tell all that I thought of. I saw in my imagination a long line of inventors and discoverers of the past and present time; I saw the workers in the forests and mines of far distant countries; I saw the skilled engineers, and the hard-working laborers of the present day, all bringing their contributions, so varied, and each one so necessary, that it might be possible for the finish to be put upon a great work by the child's touch of little Mary Newton.

The Milkman in Malta.

One of the most interesting things about traveling in foreign countries is, to us, not so much the countries themselves, as the people who live in them. While we admire fine scenery and grand buildings, and like to visit those places famous for some event in history, we also like to know the people, and see how they live, and how they manage their matters of every-day life in the house and out of it. We have met people who have spent years abroad, and who could talk about mountains and lakes, cathedrals and paintings, but could tell nothing about the people of the countries they visited, and who seem to have taken no interest in what was going on outside of the hotels where they staid. When we visit a strange city, even in our country, we are sure to make a visit to the market, and see what the people live upon, and the different ways in which the things are brought to market and sold. The difference between a market in Boston, and one in Charleston or New Orleans, is as great as if the two were in separate countries, and if we go over the border to Montreal or Quebec, we find many things that seem new and strange. Not in the markets only, but other every-day matters are managed differently in different parts of our own country, and these things are still more strange when we go abroad. When we first visited a city in our next-door neighbor-country—Mexico—one of our first surprises was the way in which people were supplied with water. Coming from a city where there was water in every house, and one had only to turn a cock to get an abundance, you may imagine how strange it seemed, to see the water brought around to the houses in great leathern bags upon the back of a *burro* or jackass. These bags were so arranged that one hung down on each side of the animal; at the bottom of each bag was a hole, from which to draw off the water, and the funniest thing of all was the way in which this hole was stopped, to keep in the water until it was wanted. A cow's horn was put in from the inside, and stuck part way through the hole; when the water-man wished to draw off water for a customer, he pushed up the horn a little from the outside, and when enough had been drawn, he let go of the horn, and the weight of the water in the bag pressed it down so tight into the hole that not a drop would leak. Another odd thing in the same city was the way of serving milk; there were milk-men, but no milk-carts; the old cow herself was both can and cart, as she was driven from house to house, and milked in the street before the doors of the customers. This is a slow performance, and hardly fair on the cow, to oblige her to make the milk, and carry it around besides, but the customer is quite sure to get fresh milk and pure, though if all that is said of milk-men in Yankee cities is true, they would not be long in contriving some way to water the milk. The traveler who visits Malta, will see something like this Mexican method of serving milk, only goats take the place of cows. In our country boys and girls, at least those who do not live in cities, know little about goat's milk, though in cities many of the poorer people of the foreign population, keep goats, as their neighbors, who have gardens, know to their sorrow. Goat's milk is very rich indeed, but you would not like to drink it, as it has a taste quite different from cow's milk, though persons used to it do not mind it; we have often, in other countries, used it in coffee, and found it very good. In hot and dry countries there is not for the greater part of the year grass enough to support cows, and the people use goats instead, as they will live upon any green thing, and flourish where a cow would starve. In Malta, and other places in southern Europe, the people use goat's milk almost altogether, and the towns are supplied in the manner shown in the engraving. The flock of goats are driven along the streets, and milked at the house-doors. The goats show great intelligence, and seem to know their business quite as well as the persons in charge of them, as they soon learn the places where they are to be milked, and will stop at the right houses of their own accord.

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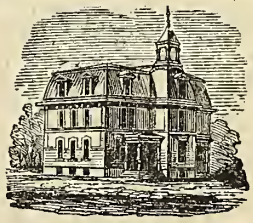

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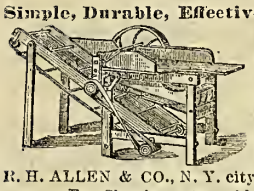

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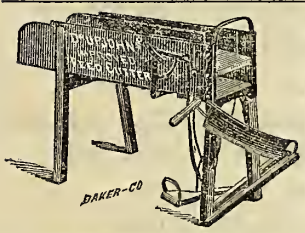

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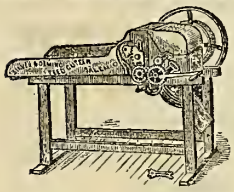

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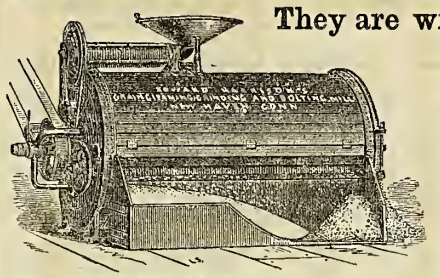

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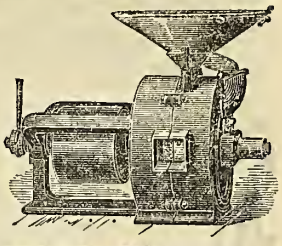

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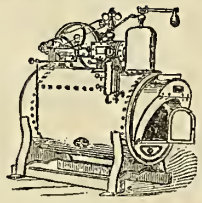

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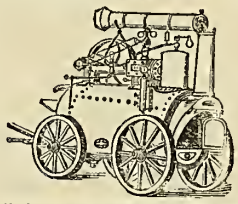

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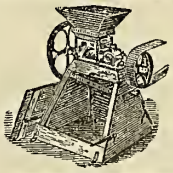

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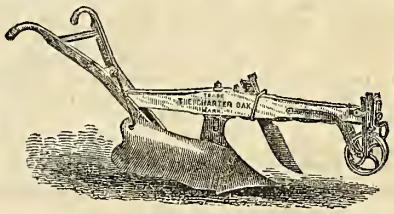

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[*Read the Table of Premiums in next column and the notes below it.*]

Explanatory Notes.

N. B.

Read and carefully Note the following Items: The next Table tells the *name* and *cash price* of each article, and, (in the last column but one), gives the number of names sent in at the regular price of $1.60 a year that will secure any premium article. (The last column gives the number of names at the lowest club price for 20 or more names, that is $1.10 each. Some persons quickly raise large clubs by taking all the names at $1.10 each, and themselves pay the difference, 50 cents each, and even thus get the premium articles very cheaply.) (*a*) All subscribers sent by one person count, though from several different Post-offices. But....(*b*) Tell us with each name or list of names sent, that it is for a premium....(*c*) *Send the names as fast as obtained*, that the subscribers may begin to receive the paper at once. You can have any time you wish up to next July, to complete your list....(*d*) Send the exact money with each list of names, so that there may be no confusion of money accounts....(*e*) Old and new subscribers all count in premium clubs, but a portion, at least, should be new names; it is partly to get these that we offer premiums to canvassers....(*f*) Specimen Numbers, etc., will be supplied free, as *needed* by canvassers, (when 3 cents per copy is furnished to pre-pay postage), but they should be used carefully and economically, and where they will *tell*....(*g*) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at *our* risk; otherwise it is not.

Table of Premiums.

[In the following table is given the price of each article, and the number of subscribers required to get it *free*, at the regular rates of $1.60 a year, and also at the club rates of $1.10 a year, postage included, which is prepaid in all cases *by the Publishers*.]

TABLE of Premiums and Terms

For Volume 36—(1877).

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No.	Names of Premium Articles.	Price of Premiums.	Number of Subscribers required at $1.60	or at 1.10
1	*Pat. Magic Bellhead Pencil (Ludden & Taylor)*	$ 1 50	4	....
2	*Ladies' Magic Charm Pencil (do. do.)*	$ 2 00	5	20
3	*Gents' Magic Charm Pencil (do. do.)*	$ 3 00	8	30
4	*Gold Pen, Telescopic Case (do. do.)*	$ 2 50	7	27
5	*Gold Pen and Pencil, Telescopic Case, Elegant (do. do.)*	$ 5 50	13	37
6	*Centennial Magic Pencil (do. do.)*	$ 3 00	8	30
7	*Patent Telescopic Gold Pen and Pencil (do. do.)*	$ 6 50	15	45
8	*Knives and Forks (Patterson Bros.)*	$14 75	22	73
9	*Knives and Forks (do. do.)*	$18 50	28	95
10	*Carver and Fork (do. do.)*	$ 3 75	9	32
11	*French Cook's Knife, Fork, and Steel*	$ 3 75	9	32
12	*Pocket Knife (Meriden Cutlery Co.)*	$ 1 50	4	....
13	*Pocket Knife (do. do.)*	$ 2 00	6	22
14	*Pocket Knife (do. do.)*	$ 2 75	7	27
15	*Ladies' Pocket Knife (do. do.)*	$ 2 00	6	22
16	*Multum in Parvo Knife (do. do.)*	$ 3 50	8	30
17	*Boy's Wagon (C. W. F. Dare)*	$ 5 00	12	37
18	*Patent 4-wheeled Propeller Velocipede, (C. W. F. Dare.)*	$ 8 00	16	52
19	*Crandall's* **John Gilpin**	$ 1 00	3	....
20	*Crandall's Masquerade Blocks*	$ 1 00	3	....
21	*Crandall's* **Acrobats**	$ 1 00	3	....
22	*Crandall's Building Blocks*	$ 2 00	5	20
23	*Crandall's* **Menagerie**	$ 2 00	5	20
24	*Case of Scissors (U.S. Steel Shear Co.)*	$ 4 00	10	31
25	*Terrestrial Globe [Schedler's](Steiger)*	$ 3 00	8	30
26	*Combination Ten-pin Alley(Horsman)*	$ 2 50	7	27
27	*Pair of Skates (Patterson Bros.)*	$ 3 50	8	30
28	*Doll's Cottage Chamber Set (Dare)*	$ 4 00	9	32
29	*Child's Self-operating Swing (do. do.)*	$ 4 00	9	32
30	*Improved Table Croquet (Horsman)*	$ 3 00	8	30
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39	*Castors (do. do. do.)*	$ 9 00	17	54
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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 407.

☞ Subscribe **this month for all of 1877**, and get the **December** Number FREE.

Acclimating Cattle in the South.—"J. B. W." Somerset, Texas. Cattle of mature age are difficult of acclimatation when moved from the Northern to the extreme Southern States. But if yearlings are brought in early in the winter, or a short time before the commencement of winter, they are readily acclimated. It would be easy to obviate the tendency to costiveness induced by the dryer southern herbage, by giving once a day a small quantity of linseed oil-cake meal or some linseed oil. Shelter from the sun during the hottest weather in their first summer is advisable. There are numerous Jersey herds in the South, a fact which shows that with proper care there need be no difficulty.

Stock Pump.—"A. S. N.," Brandon, Vt. A pump for watering stock that can be submerged in the well would be safe from freezing in the winter. A pump of this kind, known as the American Submerged Pump, and wholly of metal, made by the Bridgeport, Ct., Manufacturing Co. would probably answer the purpose required.

To Correspondents.—From a pressure of business, caused in part by the necessity of giving needed attention to the Centennial Exposition, and in part by other matters, some requests for answers by mail have had to be postponed, and those only which were urgent have been attended to. A reply to a query, by mail, is given as a courtesy whenever practicable, but there are times, when from press of matters that cannot be put off, it is impossible to be as prompt as we wish.

Blasting by Dynamite.—"J. M. P.," Vienna, Ill. Dynamite or giant powder for blasting is made by the Atlantic Giant Powder Co., of 61 Park Place, New York. The cartridge may be procured ready made. It would be advisable, to avoid danger, for those who have land to clear of rocks or stumps to secure a person who is used to the explosive to do the work for them. The company will send an expert to do the work, and if there is a sufficient amount to be done, or several who have such jobs to do would join together, the expense would be lightened. There is no question that this mode of clearing land is by far the cheapest and quickest, but we would advise an inexperienced man not to attempt to do the work himself.

Milk-Fever in Cows.—"J. P. N.," Stark Co., Ill., writes that he had a cow down with milk fever, and very sick. He gave her a dose of Epsom salts in water, and a few hours after milked two quarts from one side of the udder, and poured the milk down the cow's throat. Four hours after he rolled the cow over and milked two quarts from the other side, giving the milk to the cow. The fever soon after left and the cow began to eat. The question is what cured the cow, the salts or the milk; we should say most likely the salts.

Profit of Sheep Raising in the South.—"J. W. B.," New Haven, Ct. Information respecting sheep-keeping in the Southern States may be gathered from Stewart's Shepherd's Manual, in which the latest statistics, and the most recent history and modern methods of management of sheep, both in that locality and elsewhere, are given. There is no mention of goats and goat-keeping in any book, so far as we know. Mr. R. Peters, Atlanta, Ga., who knows more about goats than perhaps any other person in the country, has given and can give interesting information.

Side-Hill Plows.—"J. S.," Butler Co., Pa. The chief purpose of side-hill plows, is to turn furrows down hill, and not up hill, specially avoiding the necessity of doing the latter. The design of the manufacturers of these plows now is to make them easy to work, of light draft, and throwing over the furrow completely as well upon level land as upon a hill-side and down hill. With a swivel plow there is no need to turn furrows up hill, that can be done by an ordinary plow if desired.

A New Seed Store.—Mr. W. H. Carson, formerly of Peter Henderson & Co., has established himself at No. 125 Chambers St., N. Y. Mr. C. is one of our most accomplished seedmen, and has an excellent location where we hope he may have the success he deserves.

How to Pack Eggs for Winter.—"An old Subscriber," Utica, N. Y. There are several sure ways of packing eggs to keep for some months in the winter. Take perfectly fresh eggs, and pack them in a butter firkin, or barrel, and pour over them milk of lime, or thick lime wash, after it has cooled, and head up the keg; or pour over them the strongest brine; or smear the eggs with cotton-seed or linseed oil, and pack them on their broad ends in wheat bran in a keg, barrel, or box very tightly, and each week turn it over so as to reverse the position of the eggs. The last method we have found to be the best. To pack eggs in dry salt has failed with us to keep eggs for any length of time.

Inflammation of the Udder.—"J. W. A."—When a cow's milk suddenly dries up and becomes clotted in the udder, it is probably due to garget or inflammation of the udder from some one of many causes. The udder is then hard or lumpy, and hot. A remedy is to give the cow at once 8 or 12 ounces of Epsom salts, with half an ounce of saltpeter, repeating the latter in six hours. If the milk is difficult to draw, a solution of one ounce of carbonate of soda in a pint of water should be injected in the teats with a syringe, and then milked out. This will bring away the curded milk which, if left in, will make matters very much worse. If the cow is feverish, the saltpeter may be repeated for a day or two. To bathe the udder in cold water, rubbing and squeezing it gently for a considerable time, is useful.

Enzootic Ophthalmia.—"C. H. S.," Belleville, Kansas.—The symptoms of enzootic ophthalmia in cattle are precisely those you describe as exhibited by your cow. They are general fever, loss of appetite and constitutional disturbance; inflamed and weeping eyes; swelling of the eyelids; clouding of the eye from exudation into the cornea, ulceration and total blindness. It is contagious and will spread through a herd. The treatment is to administer immediately one pound of Epsom salts, followed by one ounce of saltpeter daily for a few days; keep the patient in a dark stable and cover the eyes with a cloth kept wetted with a solution of one dram each of nitrate of silver and carbolic acid in a quart of clean rain or boiled soft water. If relief is not gained, common blistering ointment should be rubbed on the temples or the cheeks, below the eyes. Cattle that have lost their sight should not be used for breeding, as the disease may become hereditary.

Asking Questions.—At a time when we are having many new readers, we would say a few words to them, and to the older ones also. There is, perhaps, no portion of the *American Agriculturist* more useful than that called the "Basket," in which are given many brief items, and it is especially devoted to answering questions proposed by our friends. There is no portion of the paper to which we devote more careful work, and no work upon it gives the Editors more pleasure in the doing. It brings us in close contact with a large circle of friends, and gives us glimpses of their home lives, their difficulties, and their schemes for improvement that we could obtain in no other manner. When we state that, for the most part, we find pleasure in receiving these queries, and giving such replies as we are able to offer, it will be seen that it is a great waste of time to write, and a needless and often annoying tax upon our time, to read a long apology for troubling us. We are often obliged to read a whole page, or even more, of reasons why the letter is written with apologies for taxing our time, and it is generally the case that the point of the whole letter is found at the very end, and might all be expressed in three lines. Of course *explanations* are often needed that we may properly understand the case—but we do not care if this is the first or the 101st time the writer has "troubled us." We desire to get at the point as quickly as possible, and when we have this, the question with us is, will an answer be of any use to others, and will it be worth, to the mass of our readers, the space it will occupy. If the query is one that could be readily satisfied by a careful examination of the published numbers of the current volume, one that any good dictionary could answer, or to which the first intelligent person in his neighborhood the writer might chance to meet could readily reply, we do not consider it just to the rest of our readers to occupy valuable space with matters that can only be regarded as trivial. Another class of correspondents expect too much—or at least ask too much. Some seem to think that, for a postage stamp, we can turn out off-hand a full treatise, or tell them "all about" any given subject, or that at a mere request we can devote several pages to giving matters that have been discussed over and again. We get requests like these: "please tell me how to analyze fertilizers"—"I intend to try to grow cranberries in our State, and wish you to tell me all about it."—"I think of putting up a small greenhouse in our village; what kind of plants do I want, where can I get them, and please tell all about propagating them."—These are actual cases that are of recent occurrence, and there are many more of like character. Generally a reply is wanted by "return mail." To answer such in a manner to be of any use, nothing short of a treatise, the writing of which would consume not only many hours, but days, will meet the case, and we could readily find full occupation for our whole time, day and night, in correspondence of this character. When we find that there is a demand for information upon subjects not to be found in any accessible work, we prepare or cause to be prepared special treatises—if the subject is of sufficient importance to warrant it, and our works on Tobacco, Hops, Flax, Broom-Corn, and others, were prepared for the express purpose of meeting a demand for information which could not be supplied in a letter, and would occupy too much space in the pages of the *American Agriculturist*. These, and numerous larger works give full, fresh, and complete information upon their several subjects, and are afforded at very moderate prices. Our friends sometimes forget that our time is of value, and that it would be much easier, and vastly more economical, for us to send them a dozen books than to write the answers they expect. We do not write treatises in reply to requests to tell "all about" things which cannot be answered in brief, nor do we send our reply in the shape of a book, for the books cost both time and money. Our notion is, if one wishes to enter upon any special culture, or to him new branch of farming or gardening, and has not enterprise enough to purchase the collected information on the subject, he had better leave such matters to others, as he is very sure to utterly fail. Not only do letters come that require a long treatise for a proper reply, but we have those which can only be answered by the contents of a small library. We have just at hand a letter in which (14) fourteen distinct questions are propounded, covering a wide range of topics in agriculture and horticulture; many of the queries are such as any work on domestic animals would answer, others involve laying out a whole plan for the writer's farming, and others cover subjects to which no living man can give a definite reply. Yet after all, this letter is very moderate in comparison with some that we receive. We ask our friends to remember that our contract with them is to furnish a monthly paper for a given sum—and we are under no *obligation* to give anything else. But as our heart is in our work, and as we desire to do all the good we may, we willingly and gladly go beyond the letter of the contract, and lend a helping hand whenever we can—and we write hundreds upon hundreds of letters because we think the information of too personal a character to find a place in the paper, or where it seems desirable that a reply should reach the writer sooner than it would if printed. We do not write thus to discourage a single correspondent, who feels that a word from us will help him over a "hard place," or show him a way out of his difficulties, but we do wish our friends to consider that correspondence has its limits, and while we cheerfully give brief replies, and timely hints, we do not propose to stand to each subscriber in the place of a full set of Appleton's New Cyclopædia, or a full library of "Agricultural and Rural Books."

Catalogues Received.

NURSERYMEN.

GEORGE ACHELIS, Westchester, Pa. Wholesale list of fruit and ornamental stock.

BRONSON, HOPKINS & Co., Geneva, N. Y. Wholesale list with several specialties.

A. BRYANT, JR., Princeton, Ill. Trade catalogue of fruit and forest trees. Evergreens a specialty.

BUSH, SON & MEISSNER, Bushberg, Mo., send their concise and full price-list, with special circular of the "Elvira," a new white grape.

GEO. W. CAMPBELL, Delaware, O. Price list of grapes, with full account of the "Lady," heretofore noticed.

B. W. CLARK, Lockport, N. Y. Wholesale grape-list.

ROBERT DOUGLAS & SONS, Waukegan, Ill. Evergreen and other trees, tree seedlings and trees. Very full in all.

DOWNER & BROTHER, Fairview, Ky. A wholesale list of general nursery stock.

H. M. ENGLE & SON, Marietta, Pa. Wholesale catalogue, including some new peaches originating with them.

A. HANCE & SON, Red Bank, N. J., send a semi-annual trade-list, with novelties in all departments.

H. E. HOOKER & BROTHERS, Rochester, N. Y. A price list for the trade, including specialties in roses.

HOOPES BROTHER & THOMAS, Westchester, Pa., publish several retail catalogues, but condense the wholesale lists in all departments into one comprehensive price list.

T. S. HUBBARD, Fredonia, N. Y. Grape-vines at special rates and general nursery stock.

R. S. JOHNSTON, Stockley, Del. Fruit trees and hedge plants in quantity.

SAML. KINSEY, Dayton, O. A full list of small fruits at wholesale prices.

E. MOODY & SONS, Lockport, N. Y. One of our oldest nurseries, yet its trade-list is bright and youthful.

J. D. MORROW & SONS, De Vall's Bluff, Ark. This, the only catalogue we now recollect to have had from Arkansas, and contains several southern varieties.

I. A. MENDENHALL, Richmond, Ind., sends wholesale list of Cedar Hill Nursery.

E. P. ROE, Cornwall-on-the-Hudson, N. Y., describes varieties and gives prices for his small fruits.

RAKESTRAW & PYLE, Willow Dale, Chester Co., Pa., offer a general stock with the Luelling Cherry among other specialties.

JOHN SAUL, Washington, D. C., gives wholesale prices in all departments of his extensive nurseries.

R. B. THRAPP, Tallula, Menard Co., Ill., has fruit and ornamental trees at wholesale prices.

A. K. WILLIAMS, Richmond Ind., succeeds E. Y. Teas & Co. at the Cascade Nurseries.

I. C. WOOD & BROTHER, Fishkill, N. Y., succeed Burrow, Wood & Co., and send trade-list.

SEEDSMEN.

The seedsman's catalogues issued in the fall, are devoted to bulbs, implements, and a few special seeds. Those containing seeds in general appear in February.

BEACH, SON & Co., No. 7 Barclay St., give in their quarterly, "The American Garden," lists of bulbs, and useful matter about these and other plants.

HOVEY & Co., Boston, Mass., offer all the usual and many unusual bulbs.

C. W. PARK, Mt. Vernon, Ohio, makes a specialty of California bulbs and seeds.

PRICE & KNICKERBOCKER, Albany, N. Y., succeed V. P. Douw & Co. in the seed and bulb trade.

W. H. SPOONER, Boston, Mass., sends a full and neat catalogue of bulbs, etc.

J. M. THORBURN & Co., No. 15 John St., N. Y., have the usual large variety of hardy and greenhouse bulbs and roots.

JAMES VICK, Rochester, N. Y., in the last number for the year, of his "Floral Guide," is as interesting and instructive as usual, with of course an eye to increase an already immense business.

YOUNG & ELLIOTT, 12 Courtlandt St., N. Y., have so many bulbs, etc., that they require two catalogues—wholesale and retail.

FLORISTS.

WM. B. BURLEIGH, Plainfield, Conn., offers flowering plants and bulbs prepared for winter blooming.

MILLER & HAYES, No. 5774 Germantown Avenue, Philadelphia, Pa. A full list of ornamental plants, and a special and splendid rose catalogue.

MILLER, SEIVERS & Co., San Francisco, Cal., offer California bulbs and seeds, and various palms and other tropical and semi-tropical plants.

GEORGE SUCH, South Amboy, N. J., issues an autumn catalogue, and when we say that in appearance and character of its contents it is quite equal to its predecessors, we have given it all possible praise.

IMPLEMENTS.

WRIGHT'S BUCKEYE HOMINY MILL.—This mill removes the husks without any previous soaking of the corn, and turns out the hominy in a perfectly dry condition.

THE ANTI-FRICTION HAY CARRIER, made by the U. S. Wind Engine Co., Batavia, Ill.

THE RECIPROCATING SCREW MOWER, made by the National Iron Works, New Brunswick, N. J., has no cog wheels or gear of any kind.

THE AYR (CANADA) AGRICULTURAL WORKS, John Watson, Ayr, Ontario, Canada, sends us descriptive catalogue of implements.

BARNES PATENT SAWS AND LATHES for foot and steam power.

FERTILIZERS.

UNITED STATES FERTILIZING AND CHEMICAL Co., Camden, N. J., manufactures a soluble bone with 15 per cent of available phosphoric acid.

THE QUINNIPIAC FERTILIZER Co. offer Potash salts; dry ground fish guano; Fish scrap and soluble Nitrogenous Phosphate. Sold according to analyses of Prof. Atwater of Middletown Experiment Station.

POULTRY.

CHAS. E. PERRY, Wollaston, Mass.—Dark Brahmas from the stock of Lewis Wright of England, the whole of which has been purchased by Mr. Perry.

EUROPEAN CATALOGUES.

WILLIAM BULL, Kings Road, Chelsea, London, S. W., Eng. Each new edition of his catalogue of "Beautiful and Rare Plants" is pleasant to study.

WM. ROLLINSON & SONS, Tooting, Eng., send a supplement to their former excellent catalogue.

P. SEBIRE, Ussy, France. Nursery plants of all kinds.

VILMORIN, ANDRIEUX & Co., Paris, send a "preliminary" to their usually wonderful seed list.

WILSON & RANKIN, Glasgow, Scotland, send a wholesale price list of garden and agricultural seeds.

Oil for Harness.—"R. W. W.," Perry, N. Y. The best oil for leather is one that does not readily dry or turn rancid. Neats'-foot oil, which is procured by boiling the feet of cattle, is considered the best oil for dressing leather, and drying oils, as linseed oil, the worst. We have not tried the fat of geese or fowls as a leather dressing, but it would be very easy to test the effect of either of them upon an old boot. When you try it please inform us of the result.

Soup Beans.—"B. W.," Warren Co., N. J. The beans which are sold under this name in the shops are a kind of dwarf bean with black skins. They are used mostly by the Italian and Spanish residents of the large cities, and sell in moderate quantities at a comparatively high price. A large supply would overstock the market and could not be sold. They are as easily grown as any other bean, and are generally raised amongst corn by dropping two or three beans in the hill with the corn at planting time. The double crop seems to do very well.

Carbolic Soap for Sheep Dip.—"W. H. N.," Erie Co., O. Carbolic soap would be too costly to use for sheep dip, so would carbolic acid and white hellebore, both of which must be used with great care. The tobacco dip is the most effective, the safest, cheapest, and easiest to apply of any we know of. The Scotch sheep dip made by Malcolm McEwen, Louisville, Ky., is one that is in general use amongst Scotch shepherds, and has been for many years.

To get rid of Fleas.—"R. W. G. W.," East Greenwich, R. I. If a dog infested with fleas is made to lie for a few days upon a bed of fresh litter from a horse stable, all the fleas will leave him. He must then be washed with soap and water, and supplied with a clean bed. A common cocoa-fibre door mat makes a good clean bed for a dog, and is repulsive to lice, especially if the bottom of it is occasionally smeared with common pine tar. Soft soap and water used frequently is the best preventive of fleas.

Cheap Root Slicers.—"S. P.," Saybrook, O. In the *American Agriculturist* of April, 1873, were given directions for making a cheap slicer or pulper for roots or potatoes.

Horn Shavings.—"J. H. J.," Sunnidale, O. The parings of hoofs and horn shavings and cuttings are a valuable fertilizer. They contain a large proportion of ammonia (as nitrogen), and in the English market sell for $40 to $50 a ton.

Beans for Sheep.—"W. K.," Kanawha Co., Va. We would not advise you to raise beans for sheep. Peas are much more valuable, and are more readily eaten. Corn is a far better crop than beans. The field beans grown in England for stock feed are quite different from our beans, and although they have been tried here, by some of the editors of the *American Agriculturist* as well as others, they have never yet been successfully grown. The blossoms fall off and rarely produce seed, and the plants are badly infested with lice. We have no hope of success for them in this climate.

Milk for Pigs—Sow's Milk.—"W. W. F.," Galien, Mich. If possible we would feed skimmed milk to pigs while sweet; but sour milk never seems to come amiss to them. It would be very strange if sow's milk were not, like that of other animals, sweet. Sourness in milk is a result of partial decomposition, and of the change of the sugar in the milk to acid. As every kind of milk that has been examined has been found sweet, and containing a certain quantity of sugar, it is safe to say that the milk of the sow, which, so far as we know, has never been analyzed, does not differ in any material point from other milks.

Cost of a Laundry.—"W. H. G.," Indianapolis, Ind. The cost of a laundry depends altogether upon its capacity for business, and the amount of machinery. The larger it is the cheaper in proportion it can be furnished. If large enough for steam power to be used, the first expense will be greater, but the cost of operating it will be less than by manual labor. A small one that may be sufficient for a village, would cost $700 to $1,000. Larger ones suitable for the business of a city would cost $3,000 and upwards.

Thumps in Swine.—"J. B. L.," Muscatine, Iowa. The disease, of which a very distinct symptom is labored respiration or "thumping of the sides," is that known as pleurisy, or inflammation of the pleura—the lining membrane of the lungs and cavity of the chest. This disease either results in recovery, or the effusion of serum or "water" in the chest. It is then that the thumping occurs, and the effects are often fatal, unless prompt and proper remedies are applied. These are diuretics and absorbents, together with stimulants to support the system. The following has been recommended. Dissolve one dram of camphor in one ounce of nitrous ether, (sweet spirits of niter), and add a pint of water, the water precipitates the camphor in fine powder, and makes it easy to be administered. A quarter of an ounce of saltpeter is then added, and the whole well shaken up before giving. Half the above is to be given every six hours, until the kidneys are active. Then half the following should be given twice daily, viz: 1 dram sulphate of iron; 1 dram common alum; ¼ pint infusion of quassia. This disease is caused by cold and damp, and is frequently the result of rheumatism, which is shown by a stiffness of the joints of the animal, and an indisposition to move about.

Scabby Legs in Poultry.—"W. A. C.," Rockcliff, Col., gives the following cure for scabby legs in poultry, viz: take equal parts of lard and kerosene oil, and thicken with sulphur into a paste. This should be rubbed upon the legs until the scabby parts come off, when they should be smeared with sweet oil. He states that the scabs are caused by filth, which view is not the correct one, as we have learned that they are caused by a parasitic insect similar to that which causes scab in sheep. The treatment above recommended, however, is an excellent and effective one, whatever the cause.

The Best Wheat.—"W. L.," Talbot Co., Md. It is impossible to say which is the best variety of wheat for any locality; the variation in soil and climate have much to do with the success or failure of different kinds of seed. The most popular wheat at present everywhere seems to be the Clawson, which has proved to be hardy, productive, and of excellent quality. It originated in New York State.

Principles of Construction of an Ice House.—"J. A. S.," Baltimore. The principles necessary to be observed in the construction of an ice-house, are as follows: first, a perfectly well drained foundation; second, perfectly air tight floor and walls; the drains must also be managed so that while they let water out, they will let no air in; third, non-conducting spaces or materials in the walls, to prevent the transmission of heat from without; fourth, ample ventilation above, and lastly, dry absorbent packing material, in which the ice must be imbedded and surrounded. The top ventilation may be secured by means of a cupola or hood, or two of them, in the roof, and the covering of sawdust upon the top of the ice should be two feet thick. The evaporation from the surface of the covering, that is occasioned by the currents of air passing over it, cools it and prevents mold or mildew. By observing these necessary requirements, the ice-house may be constructed in any shape, or of any material, and may be built above ground, or in an upper story over a cool chamber, if desired.

An English Farmer's Mistake.—An English farmer who had purchased a quantity of nitrate of soda to use upon his meadows, received by mistake a hogshead of sugar, which was at once sown upon the grass. By and by the grocer who had bought the sugar, and received the nitrate of soda instead, discovered the mistake, but too late to recover his sugar. This curious blunder shows that at least some English farmers are either remarkably careless, or ignorant of their business, or that sugar must be a scarce article with them.

The Dog Nuisance.—A recent case in Scotland is worthy of notice here. A dog which had worried a number of lambs, was ordered by the judge of a Scotch court to be destroyed. The judge remarked that it was not necessary under Scotch law for a dog to prove itself to be dangerous by committing injury; the fact that it was at large and not under proper control was sufficient to subject its owner to prosecution. He hoped the public would co-operate with the authorities in suppressing what had become an intolerable nuisance. It would be a matter for congratulation if we could hear an American judge utter similar remarks, for the same dog nuisance has long since become intolerable in various parts of this country.

Removal of a Wart.—"W. L.," Paterson, N. J. The raw spot left after the removal of a wart, either naturally or otherwise, should be dressed with a solution of bluestone (sulphate of copper), or with the same finely powdered applied dry. This will dry up the surface, and help to form a scab beneath which new skin will grow. The dressing will need to be repeated daily, and to keep flies from the wound, some crude petroleum may be smeared over the scab and the adjoining skin.

Draining by Wells.—"A. K. T.," Henrico Co., Va. The useful effect of draining a marsh by means of wells, depends upon the existence of a substratum of sand or gravel, through which the water will escape. The fact of a marsh being upon high ground, indicates that there is a subsoil of clay, which retains the water. The best plan would be to make a few trial pits, and search for a porous stratum beneath the clay. If one is found, then some deeper pits may safely be dug as the outlets for the drains. If no sand or gravel is found, it would be useless to attempt this plan.

Not Glanders.—"L. W. T.," Greeley, Col. Glanders consists in ulcerations of the lining membrane of the nostrils, and is manifested by a thick, gluey discharge, which may not be copious. The cause of this is a diseased condition of the blood. Bleeding of the nose and the sudden discharge of matter in large quantity are not symptoms of glanders, but rather of an abscess in one of the nasal sinuses. We would give in such a case daily doses of one ounce of *sulphite* of soda for a week or ten days, with alternate doses of one dram of sulphate of copper and half an ounce of powdered gentian root. All these to be given in cut feed.

The Second Cutting of Clover not Good for Horses.—"A. K. F.," Richmond, Va. It is a general opinion that the aftermath of clover is injurious to horses, that it irritates the salivary glands, and causes a flow of saliva from the mouth. In our own experience, upon investigating the cause of this, we found the clover aftermath plentifully mixed with Lobelia and St. John's Wort, the occurrence of which was amply sufficient to account for the effect noticed. Whether the second growth of clover is really of so acrid a nature as to cause the slobbering, is a doubtful point; we are inclined to think this is due to the presence of these weeds, the seeds of which are generally mingled with clover seed.

What should he Raise in Louisiana?—"C. N. F.," Worcester, Mass., asks what crop he should raise the first year upon a farm in Louisiana, until he gets acquainted with southern farming. That depends upon so many circumstances of which we are entirely ignorant, that we can not give any advice. But it would be quite safe for a new comer, before he determines upon his plans, to learn the condition of the soil of his farm, and the general practice of the neighborhood, and to consult the most intelligent of his new neighbors, as to the best course to pursue. A new comer into any place, is too apt to think he can teach the natives a few things, but he is generally wrong, and finds in time that local customs are founded upon some necessities or condition, which can not safely be ignored.

Mange in a Horse.—"P. W. L.," Fort George, Fla. Mange in a horse should be treated as follows. Make an ointment of lard, twelve parts, carbolic acid one part, and sulphur two parts. Rub these together thoroughly, until it is well mixed and smooth. Work some of this ointment into the affected portions of the skin twice a day. Give an ounce of flowers of sulphur daily in the feed, until the perspiration of the horse smells strongly of it, then discontinue it, but continue the use of the ointment for some time longer, until the skin recovers a healthy appearance. Whitewash the stable and stalls with lime, and cover the floor also with it, as the mange insect will live upon the wood-work for some months, and return to the horse if not destroyed.

Breeding to a Percheron.—"A. B. L.," Monterey, Ill. In breeding a medium sized mare of racing blood to a Percheron horse, we would select a stallion of well knit compact frame, fine in the bone, with a fine head, good shoulders, clean barrel, and small hoofs. A loose built, broad-footed, large-boned horse would offer such an antagonism of points, as would probably produce a colt of no character whatever; while the other sort of horse would match with the mare, and probably produce a shapely colt.

Feeding Corn-Fodder, etc.—"G. F.," Warren Co., N. J. The usual method of feeding corn-fodder is to cut it in a fodder cutter in half-inch lengths; wet the chaff, and sprinkle upon it the allowance of mixed feed, which is generally corn and bran in equal parts ground together quite fine. Of this we have fed 4 lbs. per day to a cow in full milk, and two quarts to one half dry. At noon half-a-bushel of turnips, sliced with a root cutter, or chopped with a spade sharpened on the edge, may be given. Linseed oil-cake meal is not advisable for a steady feed; for fattening stock, or for animals in need of a gentle alterative or laxative, a quart or two a day may be given. When fed regularly or in considerable quantity to dairy cows in milk, the cream is light-colored, and the butter loses in flavor and texture.

Fish for Hogs.—"C. H. C.," Smyrna, Fla. Hogs will eat fish with avidity, and will thrive upon this food if some vegetables are given with it. We know of no reason why a mixed diet of fish and sweet potatoes or corn should not be healthful for your hogs, but fish alone would not make a suitable food.

ASBESTOS ROOFING.

The only reliable substitute for tin, at about one half its cost, finished with white Fire-Proof Coating, suitable for steep or flat roofs. In rolls ready for use. Easily applied by any one.

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Fire-Proof Paints and Coatings, Cements for Steam-Joints, Acid and Gas Retorts, Leaky Roofs, &c. Roof Paint, Sheathing and Lining Felts.

Asbestos Boards, Paper, Thread, Cloth, &c.

These articles are ready for use, and can be easily applied by any one. Send for Samples, Pamphlets, Price Lists, etc.

H. W. JOHNS, 87 Maiden Lane, N.Y.,

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Building Felt.

This water-proof material, resembling fine leather, is for outside work (*no tar substances used*) and inside, instead of plaster. Felt carpetings, etc. Send for circular and samples.

C. J. FAY, Camden, N. J.

HALLADAY STANDARD.

The first Self-Regulating Wind Mill offered the markets of the world, and when material used, workmanship, power and durability are considered, it is acknowledged to be

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$3,000,000 Worth NOW IN USE.

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Agents wanted in all unassigned counties.

U. S. WIND ENGINE & PUMP CO.
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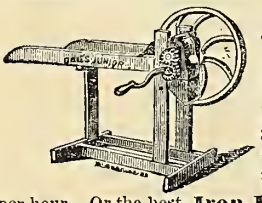

Do you want for your own use, or the Agency for the best **Self-Feeding Hay, Straw and Stalk Cutter,** in America? $16.00 Size by *HAND-POWER*, cuts 30 bushels per hour; $19.00 Size cuts by *POWER*, 180 bushels per hour; larger Sizes, 2 tons per hour. Or the best **Iron Handle Lever Cutter,** for Straw or Stalks. $10.00 Size cuts 20 to 50 bushels per hour. Machines delivered at **Cincinnati, Ohio,** or **Chicopee Falls, Mass.,** as desired. Need not be paid for till tried on the farm, and found satisfactory. Allowance made for freight. Circulars free.

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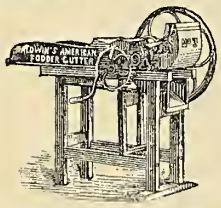

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BUTTER and **CHEESE** Coloring, Extract of Cheese Rennet, used by the Largest Dairies in Europe and America. Send for Price and Circular Free. Sole Agent for the U. S., Mrs. B. SMITH, 327 Arch St., Philadelphia, Pa. Dairymen would do well to give this a Trial.

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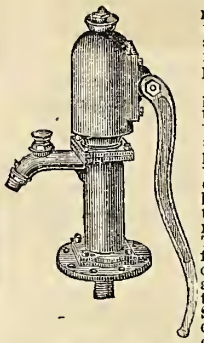

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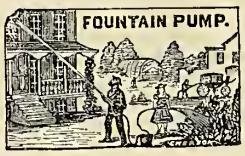

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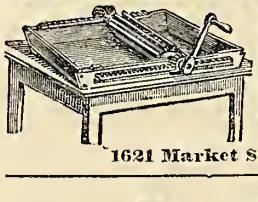

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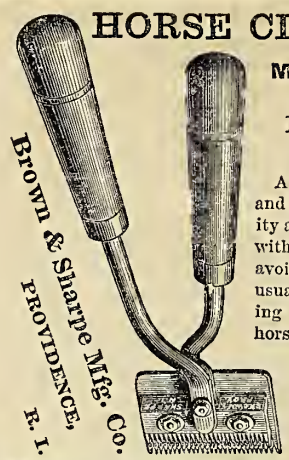

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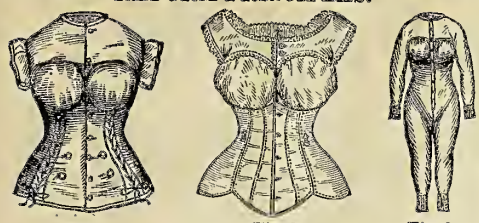

Fig. 1. Fig. 2. Fig. 3.

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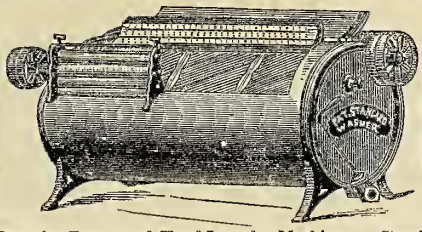

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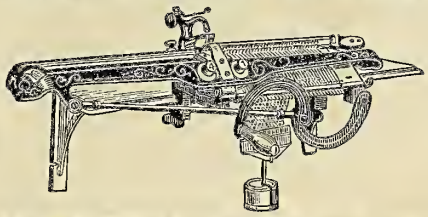

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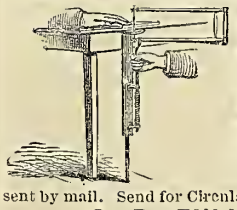

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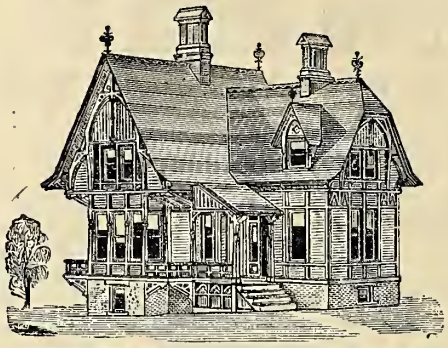

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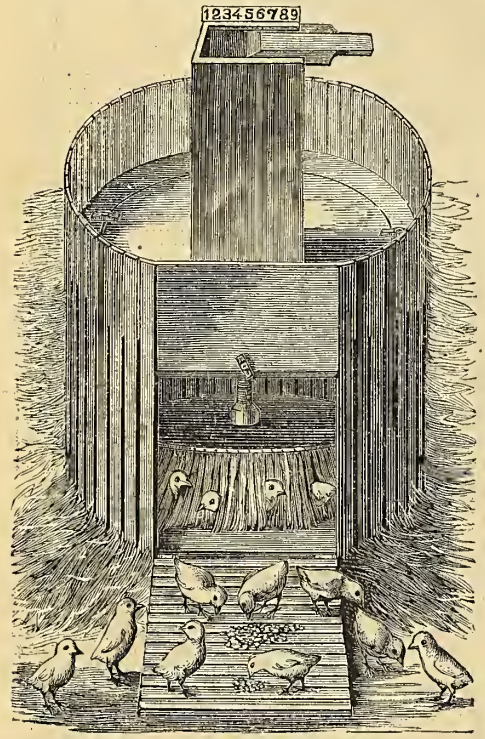

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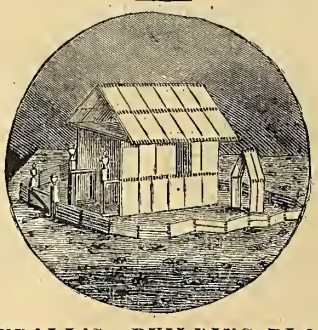

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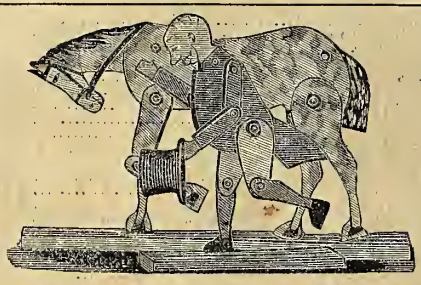

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FOR THE FARM, GARDEN & HOUSEHOLD.

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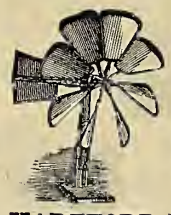

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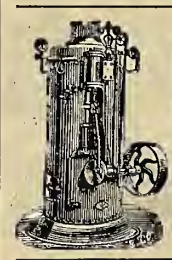

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THE FIRST PRIZE JERSEYS AT THE CENTENNIAL.—*Drawn and Engraved for the American Agriculturist*—(*See page* 449.)

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Plans for Barns.—"G. S.," Rosseau, Canada. Plans for barns were given in the *American Agriculturist* in Dec., 1872, March, 1874, July, 1876. That given in March, 1874, is suited for a building against a hill, having three floors, with drive ways into each. We are always glad to receive descriptions of new barns, with plans or sketches, although these may be but rough ones, from our readers who have built them. In giving these, one person helps another, and in that way returns something of what he has received at times from others.

Calendar for December.

Day of Month.	Day of Week.	Boston, New England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. York City, Cl., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H.M	H.M	H. M.	H.M	H.M	H. M.	H.M	H.M	H. M.
1	F	7 10	4 28	rises	7 5	4 34	rises	7 0	4 39	rises
2	S	7 11	4 28	5 28	7 6	4 34	5 35	7 1	4 39	5 43
3	S	7 12	4 28	6 41	7 7	4 34	6 51	7 2	4 39	6 58
4	M	7 13	4 28	8 5	7 8	4 33	8 10	7 3	4 39	8 15
5	T	7 14	4 28	9 22	7 9	4 33	9 26	7 4	4 38	9 30
6	W	7 15	4 28	10 37	7 10	4 33	10 39	7 5	4 38	10 42
7	T	7 16	4 28	11 49	7 11	4 33	11 50	7 6	4 38	11 50
8	F	7 17	4 28	morn	7 12	4 33	morn	7 7	4 38	morn
9	S	7 18	4 28	0 57	7 13	4 33	0 57	7 8	4 38	0 56
10	S	7 19	4 28	2 5	7 14	4 33	2 3	7 9	4 38	2 2
11	M	7 20	4 28	3 13	7 15	4 33	3 10	7 10	4 38	3 7
12	T	7 21	4 28	4 21	7 16	4 33	4 16	7 11	4 38	4 13
13	W	7 22	4 28	5 28	7 16	4 33	5 23	7 11	4 38	5 17
14	T	7 23	4 28	6 38	7 17	4 33	6 21	7 12	4 38	6 24
15	F	7 24	4 29	sets	7 18	4 34	sets	7 13	4 39	sets.
16	S	7 24	4 29	5 0	7 18	4 34	5 7	7 13	4 39	5 15
17	S	7 25	4 29	6 3	7 19	4 34	6 9	7 14	4 40	6 16
18	M	7 2	4 29	7 9	7 19	4 34	7 14	7 14	4 40	7 19
19	T	7 26	4 30	8 12	7 20	4 35	8 16	7 15	4 41	8 21
20	W	7 26	4 30	9 14	7 20	4 35	9 17	7 15	4 41	9 20
21	T	7 37	4 31	10 16	7 21	4 36	10 18	7 15	4 42	10 20
22	F	7 27	4 31	11 19	7 21	4 36	11 19	7 16	4 42	11 20
23	S	7 28	4 32	morn	7 22	4 37	morn	7 16	4 43	morn
24	S	7 28	4 32	0 21	7 22	4 37	0 21	7 16	4 43	0 20
25	M	7 28	4 33	1 27	7 22	4 38	1 24	7 17	4 44	1 22
26	T	7 29	4 33	2 34	7 23	4 38	2 31	7 17	4 44	2 27
27	W	7 29	4 34	3 43	7 23	4 39	3 43	7 17	4 45	3 38
28	T	7 29	4 34	5 5	7 23	4 39	4 59	7 18	4 45	4 52
29	F	7 29	4 35	6 21	7 23	4 40	6 14	7 18	4 46	6 6
30	S	7 30	4 36	7 30	7 24	4 41	7 21	7 18	4 47	7 15
31	S	7 30	4 37	rises	7 24	4 42	rises	7 19	4 48	rises

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New M'n	15	1 30 ev.	1 18 ev.	1 6 ev.	0 54 ev.	0 24 ev.
1st Quart	23	6 57 ev.	6 45 ev.	6 33 ev.	6 21 ev.	5 51 ev.
Full M'n	30	5 15 ev.	5 3 ev.	4 51 ev.	4 39 ev.	4 9 ev.

AMERICAN AGRICULTURIST.

NEW YORK, DECEMBER, 1876.

The year just closing marks an era in the progress of the nation, not only in its political and social history, but also in its industrial developments. No thoughtful person, whether he be a farmer, mechanic, or professional man, can help contrasting our present position and attainments in industry, and the vast improvements that have been made in recent years, with what he remembers of things as they were but a few years ago. After a retrospect one naturally looks ahead, and anticipates or forecasts what may be to come. If our progress hereafter is to bear any ratio to what it has been heretofore, we may justly look for most astonishing changes. After surveying the field of mechanical invention and improvement, we are forced to believe that the farmer is to be benefited in the near future, by the assistanee of mechanical helps, more than any other class of workers. At present he is manifestly behind all others. In the manufacturing industries, old methods have been entirely swept away, and new agents introduced. Not only has hand labor been abolished, and steam-power substituted, but old processes have given way to new ones. But agricultural methods remain to a great extent as they were from the beginning. Furrows are turned by "the crooked plow" still, and the earth is yet "persecuted with harrows," "the seed is cast," still, and the sowing is completed with as many different and almost as laborious operations as it was centuries ago. We hope to see this changed, and one operation quickly and well performed by one machine, serve to prepare the ground, and sow the fields; and so on through all the labors of the farm. It is a misfortune that farmers do not themselves invent their improved machines. Agricultural inventions, in great part, are made by enthusiasts, who know nothing of practical agriculture, and the consequence is, we have multitudes of useless plows, cultivators, harrows, digging machines, and other implements, that only serve to cause disappointment or excite ridicule. For this reason progress has been slow in some respects, but what the world needs is sure to come in good time, and the good time we believe is coming.

Hints about Work.

Regularity of Work.—The fine weather of the past few weeks has enabled farmers to finish up their fall work, and push on with that for spring. It would be well to keep on as long as the weather remains favorable, for we know not what spring may bring forth. Work should be done with regularity, and not by "fits and starts." At this season the hours of work may be shortened, and the day's labor be finished at four o'clock. There is much work that may be done in-doors; reading, studying, planning for the future, which are all equally as necessary to be done as plowing and digging drains. By apportioning the time to different labors, one may often get through more work than in other ways. System is everything in planning work, and goes a great way in doing it. By economizing the time, there may be five hours daily set apart for reading.

About the House everything should be done to make things snug, and all requisitions made by the housekeepers attended to at once. Winter time is an exacting period for housekeepers, and every thing should be done to relieve their necessary work of much of its weight. Fuel should be put under cover, and properly prepared for convenient use. Drains should be made to carry off water; a place provided for slops and waste, where they may be saved for use as fertilizers; the cellar thoroughly cleaned, white-washed, and protected; shelves put up where needed; porches for protection around the doors and well, should be made, and all these done without considering that any undue calls are made upon the patience or the time of the farmer or mechanic. The home should be considered first.

Water.—In many localities this is one of the driest seasons on record, and water will be very scarce. Wells are dry and water must be procured. A very cheap and quick method of deepening a well, is to put in a drive pipe at the bottom, and attach a force-pump, such as those made by the Nason Manufacturing Co., of 71 Beekman st., New York. These drive wells may be put down in a day or two without any digging, and one of the "Universal Force Pumps" attached to it, would force water either to the house or the barn. Water must be had on one's own premises, even at some cost.

Shelter.—It is absolutely necessary that all animals should be well sheltered from cold and damp. The reason why pigs or other animals do not fatten so readily in cold weather as in the warmer months is, that the food is largely used in keeping up the vital heat, which is now given off in excess, and lost. If this loss is prevented, animals will fatten now as readily as at any other time.

Sheep.—This is a very important time as regards sheep. If not carefully watched, they will soon fall off in condition, and this badly injures the wool, causing what is known as "break," which reduces its value to the manufacturer one-half. A healthy condition can be maintained only by preventing crowding and heating in the yards and pens, and furnishing ample ventilation, good food in abundance, and pure water plentifully.

Swine.—For April pigs, boars and sows may now be mated. The high price of pork has stimulated the production of pigs, and we may look for a probable reaction through a plentiful supply next season. This will not hurt those who keep the best pigs, but only those who keep poor sorts.

Horses.—From our observations we expect to see much influenza, sporadic at least, if not epizootic, the coming winter. To avoid this weakening disease, thorough ventilation should be given in the stables, and too great warmth avoided; the food should be of the best character, the bowels should be kept somewhat relaxed by bran mashes and linseed meal, and give an occasional tonic, such as half an ounce of gentian root, and one dram of sulphate of copper. With such care, this disease will probably be avoided. Horses after driving should not be left standing exposed to storms.

Poultry.—To keep poor fowls, now that the heavier pure-bred kinds are so cheap and easily procured, will not pay. A prominent poultry dealer from Ohio, who exhibited largely at the Centennial, stated to us that the income of farmers from poultry in his locality, had doubled, since he had been in business, from the use of better kinds of poultry. In our own experience we have surpassed even this increase of profit.

In closing these last hints for the present year, we would enforce the necessity for thoroughness in all work. Only good work pays. A man must be honest to himself, and not slight work because he is his own employer. The little losses eat away the large profits. More is lost by neglect than by working in wrong directions. A man who works and makes mistakes, has learned valuable lessons, which will help him in the future. Nothing that a farmer or mechanic can do, will be so useful to him as making a record of what he learns by his experience, except it is the reading over again and again of what he has written.

Work in the Horticultural Departments.

Every day's work that can be done now will tell upon the coming spring's labors, and advantage must be taken of every pleasant day to forward the work. If land is to be prepared for orchard planting, or sod-land is to be added to the garden, the work can be done better now than in the spring, when other things are pressing. During stormy days tools can be mended and put in order. Crude petroleum will preserve the wood-work, and if put on iron and steel-work will prevent rust.

Orchard and Nursery.

In the southern latitudes plowing and tree-planting can still be done. At the North the chief work will be in preparing for winter. Look after the

Fences and Gates, and see that these are close against stray cattle, which may destroy young trees, by breaking off limbs, or in many cases snapping off the whole tree, and thus completely ruin it.

Young Trees set this fall should have a mound of earth, a foot or more in hight, raised around the foot of the stem, to steady them during heavy winds and prevent their being thrown by frost. This is less trouble and better than stakes.

Mice and Rabbits.—After snow-storms tramp the snow firmly around the trunks, to keep away mice. A strip of tarred paper, a foot or more wide, tied around the base, will prevent both rabbits and mice from gnawing. Blood sprinkled upon the trunks is the best to keep off rabbits on a large scale. Trap or shoot all rabbits found in the orchards or garden, as they destroy shrubs as well as trees.

Pruning may be done during spells of mild weather, provided the cuts are covered with a coat of paint, melted grafting-wax, or shellac varnish, to protect the surface from the weather.

Cions.—Cut at any time when the trees are not frozen, and store in saw-dust or sand in the cellar. Have every variety labeled as soon as cut.

Heeled-in Trees.—There is no danger of loss if the earth is properly worked in around the roots and the air is excluded. If there is danger of water settling around the trees during the winter, make drains to carry it off. Clean away rubbish, so that no mice can find a harboring place among them.

Peach Stones should be buried in a dry place, so as to have the full effects of the frosts. Put plum and cherry stones in boxes with earth.

Root-Grafting.—Store the stocks in earth in the cellar, and during cold and stormy days graft them, taking care to keep the varieties distinct.

Fruit Garden.

Grape Vines.—If these are not yet pruned, attend to it the first mild day. See last month notes. If trellises are to be put up, provide posts and rails. The best material for posts is locust or red cedar, with good clear pine or chestnut rails, 12 or 14 feet long, and 2½ to 3 inches wide. Such a trellis will last for many years, with the occasional renewal of the rails, and is the cheapest in the end.

Strawberries.—Cover with straw or hay as soon as the ground is frozen, the object being to prevent the too sudden change from freezing to thawing, rather than to keep the plants warm.

Raspberries.—Tender sorts must be protected; bend over and cover with a few inches of earth. Apply manure between the rows and allow it to remain until spring, when it can be spaded in.

Currants and Gooseberries.—Prune, shortening the new growth and thinning out the old. Make cuttings of the prunings of new wood, and set out at once if the ground is open; otherwise bury until spring.

Kitchen Garden.

If rubbish and weeds have not yet been cleared up, attend to them at once, and if the ground is still open, plow or spade it and leave it exposed to the weather without harrowing.

Cold Frames.—Do not cover until freezing weather comes, and then admit air on every mild day, or the sash removed altogether, else growth will commence and the plants be seriously injured.

Spinach.—Protect the fall-grown with hay or leaves. Cover a few rows with a frame and sashes, or even boards if a very early crop is desired.

Seeds.—Thrash out and clean all seeds that have been saved for the coming season, and label with date and name of variety. Store in a dry cool place, where the mice cannot reach them.

Trenches and Pits where roots, etc., are stored, will not need covering until the weather is quite cool, and then only just enough to keep out frost.

Flower Garden and Lawn.

Lawns.—Gather the broken branches and leaves; if well-rotted manure is at hand, apply a liberal dressing, but use no other; better buy artificial fertilizers than use manure containing weed-seeds.

Young Evergreens need a slight protection, especially if set this fall. Put boughs of other evergreens around them, or give other similar shelter.

Pits where plants are stored for winter, need abundant ventilation, except in very cold spells. Water sparingly when absolutely necessary.

Walks and Drives.—Place posts or other guards where necessary to prevent careless persons from driving upon the grass. Stones and gravel may now be drawn and got ready for making new drives or walks in the spring. When there is a light snow, the stones can be loaded upon a stone-boat and drawn where needed, easier than on wheels.

Herbaceous Perennials set this fall will be benefitted by a covering of leaves or litter.

Greenhouse and Window Plants.

Ventilation is a most important matter; the injudicious opening of the ventilators and allowing a sudden chilling often destroys many plants. Open the ventilators on the side opposite to the wind.

House Plants.—Shower rough-leaved plants occasionally, and use the sponge upon smooth leaves, to remove dust. During very cold nights move away from the window, and cover, if there is any danger of freezing, with a sheet or newspapers.

Ferneries usually need but little water and should be opened half an hour every day, and even longer if any signs of mold appear.

Insects.—Keep the plants in the greenhouse free from the green fly by the use of tobacco smoke, once or twice a week. Window plants may be sprinkled with or dipped in tobacco-water. Scale and mealy bugs are best removed by washing with whale-oil soap and hand-picking.

Water plants only when they are dry, and then give them an abundance. A little water on the surface does not go down to the roots, and the plants soon begin to suffer from want of it.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Nov. 13th, 1876, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	331,000	2,196,000	2,815,000	207,000	419,000	1,437,000
26 d's *last* m'th	327,000	2,211,000	3,714,000	185,000	384,000	1,503,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	312,000	2,117,000	2,643,000	141,000	199,000	1,436,000
26 d's *last* m'th	359,000	2,189,000	3,821,000	167,000	178,000	1,419,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1876	331,000	2,196,000	2,815,000	207,000	419,000	1,437,000
26 days 1875	491,000	4,873,500	2,014,000	151,000	512,000	1,379,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1876	312,000	2,117,000	2,643,000	141,000	199,000	1,436,000
26 days 1875	473,000	5,104,000	2,912000	69,000	431,000	2,167,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Nov. 8, 1876	2,048,233	3,206,003	294,331	478,141	1,002,891	495,640
Oct. 9, 1876	1,931,892	1,195,387	158,305	91,245	825,187	421,759
Sept. 11, 1876	2,532,944	935,136	60,281	52,801	889,136	445,316
Aug. 7, 1876	2,831,299	904,557	94,960	53,914	1,232,895	434,293
May 8, 1876	1,563,826	172,090	16,365	33,301	437,387	450,643
Apr. 10, 1876	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876	5,802,293	663,982	100,741	325,191	1,080,300	307,438
Dec. 7, 1875	5,878,036	816,962	99,908	305,961	1,252,005	258,364
May 11, 1875	969,804	1,542,924	16,124	16,537	545,209	229,055

4. *Exports from New York, Jan. 1, to Nov. 9.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1876	1,672,115	21,949,300	15,122,768	978,796	29,223	574,000	952,000
1875	1,622,623	23,616,004	11,948,115	159,952	225	117,481	388,030
1874	1,899,775	33,079,216	17,596,617	584,465	3,320	106,342	321,249

5. *Tide-water Receipts at Albany, from opening of navigation to Nov. 7:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
1876	25,500	9,896,200	9,974,400	677,300	1,467,500	2,567,100
1875	97,500	17,114,400	7,920,900	181,490	2,160,700	2,168,600
1874	129,200	21,295,600	17,141,800	263,200	1,693,500	2,795,600
1873	128,200	20,192,600	17,195,500	914,500	1,667,600	3,040,200
1872	104,100	7,801,400	25,484,200	357,300	2,119,000	5,075,300
1871	233,000	18,184,000	18,124,000	707,200	2,578,000	4,833,300
1870	356,600	13,918,300	4,584,300	529,900	2,306,800	5,210,900

CURRENT WHOLESALE PRICES.

	Oct. 12.	Nov. 13.
PRICE OF GOLD	109	109 3-4
FLOUR—Super to Extra State	$4 35 @ 5 60	$4 25 @ 5 75
Super to Extra Southern	4 35 @ 8 50	4 25 @ 8 25
Extra Western	5 10 @ 9 75	5 15 @ 9 50
Extra Genesee	5 60 @ 6 85	5 75 @ 6 75
Superfine Western	4 35 @ 5 00	4 25 @ 5 00
RYE FLOUR	2 50 @ 5 20	2 50 @ 5 10
CORN-MEAL	2 65 @ 3 30	2 65 @ 3 40
BUCKWHEAT FLOUR, ₩ 100 lbs	3 25 @ 4 00	3 00 @ 3 40
WHEAT—All kinds of White	1 20 @ 1 34	1 25 @ 1 40
All kinds of Red and Amber	1 00 @ 1 28	1 05 @ 1 37
CORN—Yellow	57½@ 60	59 @ 62
Mixed	50 @ 58	55 @ 60½
White	57½@ 60	58 @ 62
OATS—Western	28 @ 48	30 @ 45
State	43 @ 48	44 @ 51
RYE	70 @ 90	72½@ 92
BARLEY	85 @ 1 18	75 @ 1 18
BUCKWHEAT	80 @ 90	75 @ 85
BARLEY MALT	80 @ 1 30	75 @ 1 30
HAY—Bale, ₩ 100 lbs	55 @ 90	55 @ 90
STRAW, ₩ 100 lbs	50 @ 95	45 @ 90
COTTON—Middlings, ₩ lb	10⅞@ 11⅜	12¾@ 12⅞
HOPS—Crop of 1876, ₩ lb	27 @ 40	23 @ 38
" old, ₩ lb	4 @ 22	4 @ 20
FEATHERS—Live Geese, ₩ lb	13½@ 14	15 @ 15½
SEED—Clover, ₩ lb	50 @ 57½	50 @ 57½
Timothy, ₩ bushel	2 00 @ 2 10	1 95 @ 2 00
Flax, ₩ bushel	1 44 @ —	1 53 @ 1 60
SUGAR—Refi'g & Grocery ₩ lb	8 @ 9⅞	8½@ 10⅞
MOLASSES, Cuba, ₩ gal. 50 test	32 @ 33	35 @ 36
New Orleans, new crop, ₩ gal	40 @ 62	55 @ 65
COFFEE—Rio (Gold)	16 @ 19¼	16¼@ 19½
TOBACCO, Kentucky, &c., ₩ lb	6 @ 19	6 @ 18
Seed Leaf, ₩ lb	3 @ 50	4½@ 50
WOOL—Domestic Fleece, ₩ lb	28 @ 50	30 @ 52½
Domestic, pulled, ₩ lb	22 @ 42	25 @ 45
California, spring clip	13 @ 30	15 @ 30
California fall clip	10 @ 21	12 @ 23
TALLOW, ₩ lb	8⅜@ 8⅝	8¾@ 8¾
OIL-CAKE—₩ ton	38 00 @39 50	38 50 @39 00
PORK—Mess, ₩ barrel	17 00 @17 25	— @17 00
Prime, ₩ barrel	— @ —	— @ —
BEEF—Plain mess	8 00 @10 00	8 00 @10 00
LARD, in trcs. & bbls. ₩ 100 lb	10 12½@10 75	10 25 @11 00
BUTTER—State, ₩ lb	22 @ 38	22 @ 38
Western, poor to fancy, ₩ lb	16 @ 35	16 @ 35
CHEESE	5 @ 13½	5 @ 13¾
BEANS—₩ bushel	1 00 @ 2 10	1 30 @ 2 75
PEAS—Canada, in bond, ₩ bu	93 @ —	93 @ 93½
EGGS—Fresh, ₩ dozen	22 @ 26	25 @ 30
POULTRY—Fowls	12 @ 20	10 @ 15
Turkeys—₩ lb	13 @ 20	10 @ 16
Geese, ₩ pair	1 37 @ 2 25	1 25 @ 2-00
Geese, ₩ lb	— @ —	10 @ 16
Ducks, ₩ pair	50 @ 1 00	50 @ 90
Roosters, ₩ lb	8 @ 10	8 @ 9
Chickens, dry pick'd lb	12 @ 20	10 @ 18
GROUSE, ₩ pair	1 00 @ —	50 @ 1 00
PARTRIDGE, ₩ doz	70 @ 85	30 @ 75
DUCKS, Wild, ₩ pair	30 @ 80	25 @ 1 50
WOODCOCK, ₩ pair	75 @ 85	— @ —
QUAIL, ₩ dozen	— @ —	1 50 @ 1 75
VENISON, ₩ lb	12 @ 20	9 @ 17
RABBITS, ₩ pair	30 @ 40	20 @ 35
HARES, ₩ pair	50 @ 65	40 @ 60
TURNIPS ₩ bbl	1 00 @ —	75 @ 90
CABBAGES—₩ 100	3 00 @ 7 00	3 00 @ 7 00
ONIONS—₩ bbl	2 00 @ 2 75	1 50 @ 2 75
POTATOES—₩ bbl	2 00 @ 2 75	2 00 @ 3 00
SWEET POTATOES—₩ bbl	1 75 @ 2 50	3 00 @ 3 50
CAULIFLOWER, ₩ doz	50 @ 3 00	60 @ 1 75
BROOM-CORN	3 @ 8	3 @ 8
GREEN PEAS, ₩ bush	— @ —	1 50 @ 1 55
TOMATOES, ₩ bskt	50 @ 75	75 @ 1 25
CRANBERRIES—₩ bbl	8 00 @10 25	7 50 @10 00
" ₩ crate	2 00 @ 3 25	2 62½@ 3 00
APPLES—₩ barrel	50 @ 3 50	50 @ 2 00
SQUASH, ₩ bbl	60 @ 1 00	75 @ 96
PEARS, ₩ bbl	2 00 @15 00	— @ —
QUINCES, @ bbl	— @ —	8 00 @12 00
GRAPES, ₩ lb	5 @ 10	6 @ 11
CIDER, ₩ gal	6 @ 12	6 @ 12

Gold has been up to 113¼, and down to 109, closing Nov. 13, at 109¾, as against 109 for Oct. 12; 110 on Sept. 12, and 111⅞ on July 12, 1876, and 114¾ on the 12th of Nov., 1875... The month's business has been seriously impeded in all branches by the political excitement.... Breadstuffs have been quite moderately dealt in, as a rule, for export and home use. The earlier movements were mainly influenced by the war-like reports from Europe, which led to considerable fluctuations in values. Toward the close, the market for Flour and Grain was comparatively tame, and quite generally depressed. The latest transactions, however, indicated more activity and firmness in Flour, Wheat, Corn, Oats, and Barley. Warlike reports from Europe, received at the very close of the month under review, led to free purchases of Breadstuffs in our market, largely of Wheat and Flour for export. Wheat advanced sharply, and most other kinds of Breadstuffs also left off stronger, with an upward tendency. Further liberal purchases of Oats were made for shipment to France—wholly of old No. 2 Chicago. Two cargoes of

old crop Barley, of poor quality, are being exported from first hands to Cork, for orders. Peas and Rye have been sought after on export account. A very slow trade has been reported in Buckwheat, and Buckwheat Flour, which have declined in price, the mild weather operating against consumption ...Cotton has been much brisker and quoted higher. The remarkable activity at Liverpool has been decidedly favorable in its influence on our market....Wool has been in good reqnest at stronger rates, though closiug tamely. Stocks are light, and holders confident in their views....Provisions have been less active, and variable iu price....Tobacco, Seeds, and Naval Stores have been moderately active, closing more firmly....Hay and Hops have been less sought after at the ruling figures....Ocean grain freights have shown less animation, and rates have been depressed. Cotton and Petroleum freights more active....Grain rates by steam to Liverpool, closed on the 11th of Nov. at 7@7½*d*; to Glasgow at 7*d*; to London at 7@7½*d*; to Liverpool, by sail, at 6½@7*d*; London, by sail, at 6½@7*d*. per bushel. Provisions by steam to Liverpool, 37*s*.6*d*.@50*s*. per ton; Cotton at $^{13}/_{32}$@$^{7}/_{16}$*d*. ℔ ℔. Grain tonnage for Cork and orders, at 6*s*. per quarter. Grain rates from San Francisco to Liverpool, quoted at 60@65*s*.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Oct'r 16	11,475	36	2,266	38,617	32,170	81,564
Oct'r 23	9,429	76	2,412	32,955	32,832	77,704
Oct'r 30	9,507	21	1,901	26,578	29,100	67,107
Nov. 6	9,993	111	1,907	26,185	29,597	68,095
Nov. 13	8,267	120	1,776	29,027	23,038	62,228
Total for 5 Weeks	48,674	364	10,262	153,662	146,037	359,999
do. *for prev. 4 Weeks*	43,477	193	12,859	107,205	97,690	261,424

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	9,735	73	2,052	30,732	29,107
do. do. *last Month*	10,869	48	3,215	26,801	24,422
do. do. *prev's Month*	9,696	58	3,682	27,602	22,030

The prices for the past five weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Oct'r 16	6¾@10¾c.	8 @10¼c.	9 c.
Oct'r 23	7¼@10½c.	8 @ 9 c.	8½c.
Oct'r 30	6¾@10¾c.	8 @10¼c.	8¾c.
Nov. 6	6¾@10½c.	7¾@10 c.	8¾c.
Nov. 13	8 @11 c.	8¾@10¼c.	9½c.

Beeves.—The course of the market since our last report has been downward until the close of the period under notice. Warm weather, excess of low-grade stock, and indifference of buyers, brought the market down at one time to an average of 8c. ℔ ℔. From this low average a rebound has been made at the close of ½@1c. ℔ ℔. on poor stock, and ¼@½c. on good and extra, and the better average of 9¾c. was reached. Part of this, however, is due to the better class of stock offered, and the demand for the best cattle for foreign shipment. Prices at the close were 8c. ℔ ℔. for cattle estimated at 55 ℔s. ℔ cwt. dressed weight, 8½@9¾c. ℔ 56 ℔s. to the cwt., and 10¼@10¾ for prime to extra of 57 ℔s. to the cwt. A few brought 11c. ℔ ℔. The market closed strong and hopefully for the next day.... **Cows.**—Milch Cows have been in demand at reasonably fair prices. A lot of 23 sold for an average of $62, and good cows are still in demand at $70@$75, although the needs of milkmen are pretty well satisfied at present.....**Calves.**—Hog dressed veals are now arriving from as far as Ohio. The warm weather forces these on the markets, and prices have weakened. A steady spare supply keeps the market in tone to some extent. Good milch veals are scarce and sell for 10@10½c. ℔ ℔ live weight, ordinary bring 6@9½c., and grassers 3½@5c. ℔ ℔....**Sheep and Lambs.**—A decline at the commencement, and a dull market have marked the month's business. At the close matters improved, and prime sheep moved with ease at 3½ to 6c. ℔ ℔ live weight, the bulk of the stock bringing 4@4½c. Fat lambs sold for 5@6½c. ℔ ℔....**Swine.**—Dressed hogs have been very quiet, with a steady demand until the close, when they suddenly became active, and sprang up fully ½c. ℔ ℔., closing at 9c. ℔ ℔. for light weights, and 10½c. ℔ ℔. for Jersey pigs. Heavy pigs bring 7@7½c. ℔ ℔., and medium 8c.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	41.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per ℔	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton	$56.50
do. do. guaranteed, ℔ ton	56.00
do do. rectified, per ton	61.50
Mapes' Nitrogenized Superphosphate, per ton	45.00@ 50.00
" Plain Superphosphate (mineral), per ton	30.00@ 35.00
" Bone Superphosphate, per ton	40.00@ 45.00
" Prepared Fish Guano, per ton	35.00@ 40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton	40.00
" " Dry ground Fish Guano, ton	45.00
" " Pine Island Guano, per ton.	45.00
Fish Guano (crude in barrels), per ton	18.00
Bone Black, per ton	25.00@ 28.00
Bone Flour, per ton	40.00@ 45.00
Rawbones Ground (pure), per ton	33.00@ 40.00
Rough Bones, per ton	22.00@ 25.00
German Potash Salts, (25@35 per cent), per ton.	20.00@ 25.00
Gypsum, Nova Scotia, ground, per ton	8.00@ 9.00
" In barrels, per bbl	1.25
Wood Ashes, per bushel	16 c.@18 c.
Nitrate of Potash (95 per cent.), per lb	8½c.@ 9 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2¾c.@ 3½c.
Nitrate of Soda, per lb	4 c.@ 4½c.
Sulphate of Ammonia (25 per cent.), per lb	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia	$3.00@ $ 4.00

SPECIAL REQUEST.

Though many Subscribers coming in during this year, extend into next year, and many others have already renewed for 1877, yet there are some **75,000** names, more or less, yet to be re-entered for the next Volume. If the Reader of this belongs to the latter class, we ask as a **SPECIAL FAVOR** that the renewal be made **at once**, for the following reasons:

1st.—It will take no more time to do this *to-day*, than next week, or later on.

2nd.—It will GREATLY ASSIST the Publishers, if their old, experienced clerks can begin at once to re-write the names on the new books, instead of having them come "all in a heap" near the Holidays, when much extra help and all-night work will be needed. With the month to do it in, the work can be done more satisfactorily to all. Please oblige us in this respect, and renew at once.

3rd.—Let Subscription letters be short—a child can write all that is needed, say in this form:

> *Name of P. O., County, & State— Date—*, 1876.
> *Publishers of American Agriculturist,*
> 245 *Broadway, New York City:*
>
> *Enclosed are* $5.40 *for the following four subscriptions for* 1877. JOHN DOE.
>
> *John Doe, at above Post Office.*
> *John Jones, " " "*
> *Charles Kizer " " " German Edition.*
> *Richard Brown, at Hamilton P. O., Iowa, (English.)*

Let all other questions, items for Editors, etc., be on a separate slip of paper, and put on that also your name, Post-office, County, State, and date. If working for a premium, note this on the above letter in two words, "For Premium," and the names will be credited to you in the Premium Book.

We will only add, that all our arrangements are planned for *increased value* of the next Volume. Please lend us your aid in making the paper known to others. Attention is called to the item "To our Friends," on page 445

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remember
The Valuable Premiums.

See Page 473, and send to the Publishers for an Illustrated List of Premiums if you have not already received it.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

CLUBS—Increasing: Advantages: Lower terms are given to clubs of four or more subscribers, partly because it costs less to mail in packages, with only name slips on each paper; and partly to encourage getting up large lists. We do not object to a person's adding names to his club from other post-offices, because such additions usually become centers of other clubs....A Club can at any time be increased by the addition of other names, if these start with the same date as the others....Any one having sent a small club at one price, may raise the club to a large figure, and lower rate for all. Thus: one having sent 4 names at $5.40, may send 6 names more for $7.60, making $13 for the whole 10, including postage. And so for other club rates. The Terms are: Under four names $1.60 each; four to nine names $1.35 each; ten to nineteen names, $1.30 each; twenty names and upwards, $1.10 each. Postage always pre-paid by the Publishers.....Premium clubs may be gathered at any number of post-offices, if all are sent in by the same person.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German edition of the *American Agriculturist.* It contains not only the Engravings, and all the essential reading matter of the American edition, but an additional *Special German Department,* edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other one contains so much useful information, or a tithe of its engravings. The Germans are a reading, thinking people, and know how to make good use of what they read. Many Americans supply it to their German laborers and gardeners, and all would find it pay to do so.—Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc., because the expense of collecting and making these is largely borne by the American edition, and no separate office or machinery is required beyond a couple of German editors and the printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition in whole, or in part.—☞ Please call the attention of your German neighbors to this paper. It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

To Our Readers in the West.

We have now, as for many years past, a very large circle of readers all over the Western States. Every now and then we see a new paper starting up, (generally a short-lived one,) laying great claims to superiority, because its proposed publication office is in some Western town or city, and warning everybody west of the Alleghanies against taking any paper printed east of the said mountains, on the specious, but deceptive plea that such papers cannot be adapted to Western culture. The truthfulness of this claim is well illustrated in one of these recent Western papers. It contained 23 pages of reading matter, of which two pages were filled with such claims and warnings against Eastern papers, and THIRTEEN PAGES *were entirely made up of articles prepared especially for and already published in the American Agriculturist!* Four and one half pages were taken from other Eastern papers, leaving three and one half pages of local matter, puffs, etc. Comment is unnecessary!—Suffice it to say, the *American Agriculturist* has, and will continue to have, a strong force of information gatherers all through the West; it will have a constant care to meet the wants and wishes of the large Western branch of its family of readers; its printing and publication in the great Metropolitan City gives it positive advantages; it will continue to publish *original* engravings, on which it expends ten times as much money as any other similar journal in the country; and it will guard its readers, West as well as East, and everywhere, against humbugs and swindlers. The general principles of cultivation are the same the world over, and this journal will not fail to note and discuss local differences. Our arrangements to meet the special wants of the great West will be superior to any former period. The Editors have themselves large personal interests in Western agriculture. We believe our present friends in the West will not only continue to value this journal for themselves, but take pleasure in introducing it to many of their friends and neighbors.

Reading Advertisements Pays, or at least looking carefully through them will, even if one does not wish to buy anything. Different men's methods of setting forth business are suggestive, and will usually supply useful business hints to every other man. It is also always well to know what is for sale throughout the country, on what terms, etc. There is the added pleasure in reading such business notices in *this* journal, found in few other papers, viz.: that only responsible advertisers, those "having both the *ability* and *intention* to do what they promise" are admitted. No "patent" or secret medicines mar our columns.—If you have occasion to write to any advertiser, for information, for circulars, or to order, it is always well to tell him where you saw his advertisement. He will be all the more anxious, and take special pains, to satisfy you, if he learns that you came to him through this journal.

Toys for Children.—*Dealers, Parents,* and *the "Little People,"* who are now looking forward to the Holidays, will find in our advertising columns something to interest them. Mr. C. M. Crandall has probably done more than any other living man to supply useful toys, combining durability, with an infinite *variety* in single sets of toys. His fertile brain is constantly bringing out something *new*, and during this Centennial year he is excelling himself in the attractiveness of new and interesting things offered to the public. The "*Wide Awake Alphabet*" (see third cover-page of this number) is one of his latest inventions; and every boy and girl ought to have one or more of the various beautiful things of Mr. C. M. Crandall's invention, which are supplied by toy dealers generally.

Not the Same.—Most readers have doubtless observed that while some letters and the border of our beautiful cover pages are retained, the central picture, and the four corner vignettes are NEW *in every number*. Many of these are worthy of careful study, as they exhibit the skill of some of the best artists.

Can He Afford It?—A farmer writes: "Much as I esteem it, I fear I must suspend taking the *American Agriculturist* for a year. My farm yields less than $500 worth of products, all told, this year, and times are hard...." Think a moment on the policy of this. One cent on each $3 produced is all the paper costs (or more if four or more club together). If crops are small, prices low, and the struggle severe, to make both ends meet, does he not all the more *need* every possible hint and suggestion he can gather, to aid him in his work, his plans, and calculations? This paper is edited by a number of practical men, cultivators of farms, who themselves feel and appreciate the present circumstances and condition of things. *They are all the while earnestly* looking out for every item of information, every hint, every suggestion that *will help themselves and help others.* They hasten to communicate to their readers every possible item that may be useful to them. They work nights and study over this matter, sketching down for the engraver everything that may be helpful to the eye and understanding. Can our friend afford to do without the help half a dozen such men can give during the year? Single hints, or new thoughts started in one's mind, often yield ten or a hundred times the cost of the paper. Not one man in five hundred can go through the thousand columns of carefully prepared reading-matter and examine the 500 or 600 engravings without getting some useful and profitable hints for his work, to say nothing of its usefulness to his wife and to his children, as an educator, as a diversion from lower thoughts. Let our friend imagine himself without any of the information gained and the thoughts suggested by these pages, during a single year past, and then calculate whether it was not well to use one three-hundredth part of his farm-products in securing it. The paper is supplied at just about the cost of making it and prepaying the postage, averaging the receipts from club and single subscribers. (Advertisers pay the cost of editing, engravings, office, premiums, etc.) We mean to make the paper as much better as added experience and observation will aid us to do. We mean to make it *pay* every reader well. We hope our friend will continue with us, and get some of his hard-pressed neighbors to try its utility for 1877.

Good Reports from the Southern States come from many sections, showing an increased attention to diversity of crops, a recovery from the depressing effects of the war, a new life, energy, and hopefulness in agricultural pursuits. The *American Agriculturist* is finding its way into many new regions, and is doing a good work. Take a specimen letter from interior Georgia: "....I was too prejudiced to read a Northern paper, and too contracted in my notions to think anything but a Southern journal could be useful to me. A Northern friend sent me yours as a present. ....I frankly confess I have got useful hints enough from it in a year, to pay for it a hundred times over..... If you have the regard for us that some Northern politicians profess, you will do our people good by pushing your paper into circulation all over our Southern agricultural districts. I see more and more that the general principles of cultivation, farm implements, etc., are the same everywhere....."

This Item for our Friends.—Many thousands of our readers know, by personal experience, that the Editors are always ready, *so far as it is their power*, to respond to every reasonable request—whether it be to answer inquiries, hunt up information, or what not. A multitude of private letters are written to individual readers, of which the public know nothing because the subjects are personal. Hardly a day passes in which messengers are not dispatched about the city, or the Editors make long tours, to find out something desired by a distant subscriber. *No charge is ever made for any such service.* We try to regard and treat our readers as if they were *members of our own families;* and we shall ever continue this course towards *all* our readers, just as far as is at all practicable. There are, however, only 24 hours in a day, and our readers are a vast multitude, literally scattered all over the world, and when we fail to respond to any reasonable favor asked, it is *not* of the heart or will.—*So much on one side.* Now we are ready to enter upon a new year's work, and may we not in turn ask our friends to do a little favor *for us?* We want to increase our subscription list, not only for increasing our resources wherewith to improve the paper itself, but believing our work a good one, we desire to reach a still larger circle of readers. Those who *know* our journal, can greatly aid in this. A kind word from them to others will go much further than anything the Publishers can say or do. Suppose each present friend of this paper should influence one other person to become a subscriber *at this time*, it would double our resources, it would double the number of reading, thinking people, it would double the extent of good done, so far as this paper does good. We therefore take the liberty to ask all our friends to do this—let us have *one* reader more for the coming volume through your influence—more than one when convenient. We shall value every such favor, and be stimulated to new exertions in behalf of all.

Are your Children being Privately Humbugged, or Worse?—The Humbug Column of this number (page 447), hints at a growing danger. The grown people having been pretty carefully warned, largely through this journal, the more villainous swindlers are working a new field. By specious advertisments in many papers, they are getting a large list of names and addresses of Boys and Girls—indeed they are fast gathering the names of all the young people throughout the country, *yours* and *ours*, reader. These lists are used by the gatherers, or sold to other swindlers, to send circulars, papers, etc., offering vile things—just the kind to excite youth, but which we would no more allow our children to have than deadly poison. The little son of one of our friends, 12 years old, last spring sent 10c. for some curious cards, worth the money doubtless, and he got them. Mark the result: Our friends Post-office Box has been crowded with the above vile sheets, directed to this boy. Had he not had a P. O. Box, these would have fallen into his son's hands. Parents look out for what comes to your children through the mails. The *American Agriculturist* will aid you as much as possible, during the coming year. Please forward to this office, copies of all such matter, with particulars.—We have saved to our readers millions of dollars by our exposures and warnings, and we are ready to grapple with this new satanic scheme—or any other imposition. Readers in the West will need to be specially careful, for these swindlers generally operate at *distant* points through the mails.

"Right Down Through the Earth."—When a school boy, they used to teach us that if we went straight down through the earth we would come out in China. And we often hear this said now-a-days.—Not so!—One going straight *down* from N. Y. City would pass through the *center* of the earth and come out a few hundred miles southwest of Australia. (Query, can you point directly towards where Pekin in China really is?). Speaking of Australia, in which are Queensland, Tasmania, Victoria, etc., there was a fine exhibition of products from our Antipodean friends, at Philadelphia. We were all the more interested in these, because a great number in Australia take and read the *American Agriculturist.* They write us, and tell us, this paper is greatly valued because it treats so much of every day work; that the English journals are edited in the interest of large land-holders mainly, and are of less use to the people who cultivate their small farms or holdings. This paper is also largely taken all around the coast of Africa, where English and German speaking people have settled, and so it is in every other part of the world. One suggests that it be called the "*Cosmopolitan Agriculturist,*" instead of simply the "*American Agriculturist.*"

"A BAKER'S DOZEN," for 13 DAYS, Yet.—"Cakes at a penny each, or 13 for 12 cents," is the Card in some bakers' shops; others make it "14 for 12 cents." So a "Baker's Dozen" may be 13 or 14. When NEW subscribers for 1877 come in before Dec. 13, we will acknowledge the receipt of the subscription, by sending, at once, this December number without charge, giving him 13 numbers for the price of 12.—That is to say, we will do this as long as our extra December edition, printed for this purpose, holds out; but we *can not* send the *extra* copy beyond the time named.

How Engravings are Made.—"A Fifteen-year-old Boy," who "was born and has always lived west of the Rocky Mountains," where he has not learned to call himself anything but a "boy" learner as yet, (he would have signed himself "a young man" had he lived in some places we wot of), wants us to tell him and his fellows *how* our engravings are made. We will try. Uncolored pictures are made by marks, dots, or fine lines, upon a flat surface, with pen, pencil, or brush. Light and dark shades show the different parts of an object. To *print* such pictures, the artist takes a piece of very hard Turkey Boxwood, cuts off across the grain a piece just the thickness of the length of type. One side of this he polishes smooth, and colors it white like drawing paper. This is on the ends of the grain of the wood. Next he draws upon it, with a pencil, just the picture he wants printed. Then the *engraver* takes it, and with some sharp, fine pointed little chisels, he cuts away every bit of the surface of the wood that is not touched with the pencil in making the picture. To help his sight, and hand, he has a magnifying glass on a frame between his eye and the block, so that he can see and rightly cut out the finest points. Now, when an inked roller passes over, the points and lines not cut away will take off some of the ink. A paper pressed upon these takes up enough ink to make a picture on the paper just like that first drawn upon the block. This block is set up in a page with the type, and an electrotype plate is cast from it. Then the printing press goes on multiplying copies of the whole page. The block being engraved on the end of the grain will stand a good deal of printing, but will wear after a time. The copper plates used to print from do not wear readily; and the original wood cuts are kept fresh and new, to cast other plates from when wanted. (We have the engraved blocks of nearly all the pictures that have ever appeared in the *American Agriculturist.* They have cost nearly $200,000, or quite that sum). It takes a good artist, and a good engraver, and a good deal of time, and patience and skill, to get such fine engravings as are used in this paper. Sometimes a man must work two days on a single square inch or so. Examine now, carefully

the fine points and lines in the pictures (on pages 460 and 461 for example) and see how skillfully the work is done; and then how carefully it is printed with fine ink, not to have any blots, or filling in the cut away spaces. Such pictures instruct, and cultivate one's taste, while the majority of coarsely cut, roughly printed pictures usually seen, are far less beautiful and instructive. We pride ourselves on our engravings, even those on the cover, a large portion of which are *new* in every paper. We give **500** to **600** of these Pictures in every volume. They cost a great many thousands of dollars; but hundreds of thousands of people see and enjoy them, and are instructed by them. Did you ever think, that while some of these engravings cost from $100 to $200 each, your beautiful copies of them, in the paper, cost you less than half a cent each? even if you allow nothing for all the rest of the paper? Six hundred of these engravings in a year, at $1.50, is only a quarter of a cent each! Now we have told you *how* these are produced, we think you can examine them minutely, and enjoy them all the more. We shall have a lot of good ones for you in the next volume. Tell your friends about them, explain how they are made, and perhaps you will get some of them to join you in procuring copies, in the paper, next year, for which the publishers are now ready to receive orders.

"Fifteen Dollars a Day and Expenses Paid."—Such advertisements are common in the newspapers, the sums offered varying from $5 to $25 a day. On sending for particulars, one generally (not always) finds out he must *first* advance or become responsible for some money, which is gone any way, and then he must try his luck in selling some "gimcracks," to get the promised salary and expenses out of profits.—We make no such offers. But we do say that very many of our readers have cleared several dollars a day with no outlay or risk, and no expenses to pay. Thus: let one show a copy of this paper to his friends and neighbors, doing it evenings, rainy days, etc., and by properly explaining its value, he may get three, five, ten, or more, to become subscribers. For such favors the Publishers make him a present of something valuable, worth its full price in money. A very few names thus obtained, will secure $3, $5, $10, $20 worth, or more. **Many Thousands** of our readers have done this, with decided *profit* and *satisfaction* to themselves and others. There is hardly one of our readers that may not do the same. Our Illustrated Premium Sheet explains the whole matter. This month is a capital time to take a hand in it. If any one has not received a copy of our Premium Sheet, send a Postal Card request for one to the Publishers of this Journal, and it will be promptly furnished without expense.

American Agriculturist in Virginia—Its Good Work There.—One of Virginia's most enterprising and public-spirited farmers, writing to an Eastern friend, says "that the agricultural and even the daily journals in that State are so controlled by and dependent upon the advertisements of the fertilizer men, that little correct knowledge can be obtained from them in regard to artificial fertilizers." He writes that the circulation of a couple of Northern journals, "and especially the *American Agriculturist*, in Virginia, is doing more than everything else to spread knowledge. Would that they could be sown broadcast over the State."

About Your BOYS.—Every parent worthy to have a son at all, is solicitous about his future. If the boy is sick, he is anxious. If he have any deformity of body, no care, no expense possible, is spared to cure or rectify the defects. Is every one *as* anxious about a deformity of mind, or morals? We believe in bringing up boys to work; their muscular development requires exercise. But let it be remembered that every child, not an absolute idiot, is a living interrogation point, is born with an inquiring mind, a perpetual thirst after knowledge, that must be satisfied, and will be. It is the parent's duty to guide, lead, direct and satisfy this longing. The true way to make useful labor satisfactory to him is to make it a source of information. You may tell him it is his duty to work, but he don't see it in that light; only affection or fear lead him to perform the required task.—Talk to him about the work, the best methods to secure the best results. Teach him about the difference in crops, in modes of tillage, manuring, etc.; the superiority of one implement over another, and the why. Let him know something of the nature of soils, the effects of air, water, frost, and tillage upon them. Let him understand the characteristics of different kinds of animals. Get him a book on one of these subjects, talk with him about its contents, its recommendations, etc., and when he has well mastered that, get him another. A very few dollars expended in this way will do wonders in developing thought, in making him interested in his work, in preparing him to become an intelligent, active, successful worker. Have him read to you from this or other journal, and talk with him about what is read. Begin this very early. Many who think such papers are chiefly for men, would be surprised at the intelligent interest that could be awakened in them, in boys from sixteen years of age, down to seven years even. Parents, feed the minds of your children with good food; it is as important as good food for the body. A dime a week for journals and books about their daily work, is one of the best possible investments you can make. Take it off from the finery or quality of their clothing if need be, but let the mind have what it craves, and turn it into useful channels of thought, or it *will* run after trashy, if not poisonous mental food. No matter what calling you intend a son to follow in the future, he will be all the better prepared to take hold of it successfully, if you make him interested, and therefore happy in whatever he is *now* working at. Don't keep your numbers of the *American Agriculturist* laid up for your own special use, but read them over, and talk about their contents with your boys. You will in the future see ten times their cost in the development of your sons.

Wells and Cisterns easily Examined.—The bottom of every well and cistern should be examined at least twice a year, especially if not closely covered. Sticks, filth, worms, toads, etc., often fall in, and injure the water. A mirror, or piece of common looking glass, held so as to throw the sun's rays to the bottom, will show everything very plainly, even through a dozen feet of water, or more. In some situations, as in a cellar cistern, two or more mirrors may be needed to carry in the light, by double or triple reflection of the rays.

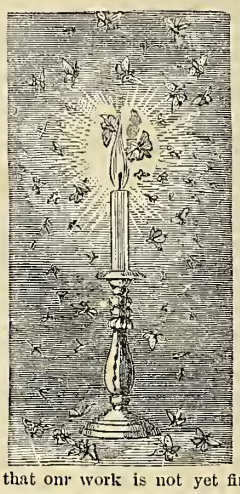
14 Little Things—Interesting Examples of Saving or Producing Them.—Life is mainly made up of trifles. A pin-hole will in time sink a large ship. A small saving per day or week will speedily amount to a large sum. An extra production of a small thing, as an extra egg per day or week, a good hill of corn in each row, a bushel of wheat, or corn, or potatoes, extra per acre, will in the course of years make one comfortably rich, or what may be better, will buy many convenient or useful things as one goes along, and such extra production is easily secured by trifling thought, care, or labor. To illustrate what the weekly saving, or the extra production will amount to in *a single year*, we select the following common items:

1	Egg a week	at 37c. per doz	$1.60
2	Eggs a week	at 18½c. per doz	"
1	quart Wheat a week	at 96c. per bushel	$1.60
1½	quarts Corn a week	at 66c. per bushel	$1.61
3	quarts Corn a week	at 33c. per bushel	"
2	quarts Potatoes a week	at 50c. per bushel	$1.62
4	quarts Potatoes a week	at 25c. per bushel	"
1	Cabbage a week	at 3c. per head	$1.56
1½	quarts Milk a week	at 2c. per quart	$1.56
1½	oz. Butter a week	at 32c. per lb	$1.56
½	pail Coal a week	at $4.92 per ton	$1.60
1	Foot of Wood a week	at $4 per cord	$1.66
2	Feet of Wood a week	at $2 per cord	"
¼	lb. Sugar a week	at 12c. per lb	$1.56
½	oz. Tea a week	at 95c. per lb	$1.56
1½	oz. Coffee a week	at 32c. per lb	$1.56
1	P. O. Stamp a week	at 3 cents	$1.56
1	Poor Cigar a week	at 3 cents	$1.56
	Total		**$22.17**

A Practical Suggestion, timely just now, is, that any *one* of the above items saved, or produced extra, will just about pay for the *American Agriculturist* a whole year, postage included, which will place before your family **500** to **600** illustrative engravings, and a *Thousand Columns* of reading, containing multitudes of hints, carefully gathered and prepared, that can hardly fail to be of use to yourself and others in developing thought, and suggesting modes of doing many things. Would it not be well to pass the above along to your friends and neighbors at this time?

Potato Pests.—The Colorado Beetle has so overshadowed all other enemies to the potato that of late years that has been regarded as the only one, while in fact there are several others. No one has observed so well and written so much about these insects, as Prof. C. V. Riley, State Entomologist of Mo., but unfortunately his writings in the State Agricultural Reports, are not generally accessible. In view of the need of more knowledge on this subject, Prof. Riley has embodied his former accounts of these insects and presented them, with much new matter, in a volume entitled: "POTATO PESTS, being an Illustrated Account of the COLORADO POTOTO-BEETLE, and the other Insect Foes of the Potato in North America, with Suggestions for their Repression, and Methods for their Extermination." This work, which the Orange Judd Company have in Press, and nearly ready, gives the most complete account of the Colorado Beetle anywhere to be found, and includes all the latest discoveries, as to the habits of the insect, and the various means for its destruction, and is illustrated by a large number of engravings, and a map showing the spread of the insect since it left its native home. Our European friends, whose alarm at the probable advent of the "Potato-bug" among them is only equaled by their lack of knowledge concerning it, will find here the information they need. It will enable them to identify the insect when it reaches their shores, as it most probably will, and teach them how to give it a proper reception when it comes.

Sundry Humbugs.



As we close our labors for the year, we are glad to find that our fears, expressed in one of the early months, were groundless. We thought that the crowds at Philadelphia, and on the various lines of travel to the Exhibition, might afford an opportunity for the successful operation of various swindlers. Happily the Centennial year has been the dullest in all our experience with humbugs. Did we know that this was due to the fact that people were growing wiser, we might claim some share in producing this result. Whatever may be the reason for this lull, we are very sure that our work is not yet finished, as on this, the last month of the year, we find that our budget contains some new species of the genus humbug. Nevertheless there were more

HUMBUGS AT THE CENTENNIAL

than there should have been, especially in the medical line. Secret compounds of various kinds—in fact, "quack medicines"—were showily displayed side by side with really useful articles. These were, we are happy to say, mainly from abroad, and the fault was with the commissions of the different countries, rather than with the managers of the Exhibition....In discussing the various humbugs, we find that some demand serious treatment and earnest protestation, while others are best managed by turning them into ridicule. Some of the small schemes, which we may call

CATCH-PENNY HUMBUGS,

are so ridiculous in themselves, that even their victims, after their first flush of anger, must laugh at the grim humor of the affair, and a mere statement of them is sufficient warning to others. For example, one of these funny rascals advertised that he would, on the receipt of 25 cents, inform the sender how to write without ink or pens. Those who were foolish enough to invest, received in reply "write with a pencil." Another of this style advertised that any one sending $1, could have "a correct likeness of himself, and his fortune told." Of course, vain and weak-minded youths caught at this; but when the package supposed to contain the correct likeness was opened, there was found a 5-cent looking-glass, and the information that the victim could tell his own fortune by counting his money!

THAT DANGEROUS HOTEL,

which was formerly in New York, appears to have moved over towards sun-down. Persons going to Nevada City, Cal., should be very careful in the choice of their hotel, as there is one at which people die so suddenly, that they have not even time to tell where their friends live, or what shall be done with their baggage. A few years ago we described the hotel dodge, but as it will be new to many, we relate a recent case. A gentleman in Cylon, Wis., received a letter as follows. "Nevada City, Sept. 16th, 1876. W. G., Esq., Dear Sir: On the 19th of last month a gentleman stopped at my hotel, registering his name (we give only initials) as D. F. G. Two days ago he

DIED VERY SUDDENLY

of apoplexy (how very precise). Not knowing anything of his relatives, I examined his trunk, and found it to contain a very fine gold watch and chain, two silver-mounted revolvers, a gold ring, and many other valuables. I also found some papers addressed to W. G., Cylon, Wis. On seeing this, and supposing you to be some relative, I concluded to write to you, as the trunk is a very valuable one, and you are evidently the proper person to have it. I would also say that Mr. G. owes me a balance of $20.50, for board-bill, etc. Please remit to me the above amount by registered letter, with instructions to what point you want the trunk shipped, and I will forward it to you at once. Address, T. A. Lapierre, Nevada City, Nevada Co., California."—The Wisconsin gentleman who received the above, having a relative in California, did not wish to ignore the matter altogether, but took the precaution to place the letter in the hands of a business man in Ne-

vada, who of course found it to be a bare-faced attempt at swindling, and that great numbers of similar letters had been sent out all over the country. The instigator of the scheme is well known in Nevada, as a person who formerly had a "lottery" with its headquarters in that place. The thing is so transparent, that the mere exposure of it is sufficient to deter sensible persons from sending money in response to such letters; as for persons of the other kind—nothing will deter them. It is now five or six years since one Collinwater was sending out letters from N. Y., that were almost word for word like the above. It is a little short-sighted in these would-be swindlers, not to know that the first question of a relative who received such a letter, would be, "What have they done with the body?"—If buried there were charges, and a trunkful of valuables would not be sent off on the mere payment of a board-bill. We have, first and last, seen a number of these letters, and find that in every case the person who died suddenly, has "a valuable gold watch and chain, silver-mounted revolvers, gold ring, etc." This leads to an important deduction. If you would avoid sudden death, don't travel with valuables in your trunk....The number who write us about

CHEAP JEWELRY SCHEMES

is really surprising. All the reply that we can make is, that the jewelry will be in *real value* much less than it costs. If any think that articles sold for a dollar can be *worth* any more than ten dimes, they will only learn to the contrary by experience. Our own practice in regard to jewelry is to wear none whatever. Our views in the matter are, that there are but two excuses for wearing jewelry at all: first, the intrinsic value and beauty of the articles, and these should only be worn by those who can easily afford them, and second, that the articles are keepsakes or mementoes, and have associations that render them valuable to the wearer. Nothing is more vulgar than cheap jewelry; in the eyes of thoughtful persons it is anything but ornamental, and the wearing of what pretends to be something which it is not, is apt to be taken as an index to the character of the wearer. We are led to these remarks by a circular of a New Jersey concern now before us; as several have been sent for an opinion it has no doubt been widely distributed. In so far as it offers packages of articles of "Grecian Gold," the "nearest approach to solid gold known," there is no pretense, as in some cases, to give anything but an imitation. A package contains a stud, a pair of spiral studs, a watch chain, a pair of sleeve buttons and a plain wedding ring, the estimated value of which is $6, but which are sold for $1. Being sold at this price their original cost could not have been over 50c. and probably much less than that. There are five articles, and their intrinsic value is 10c. each. Just think of "wedding rings," at ten for the dollar! We know nothing of this "Grecian Gold" beyond what is given in the circular, and if our inquiring friends wish to buy cheap ornaments this has the merit of being *very* cheap. We have had scores of letters complaining that the writers have bought cheap articles that were "warranted to look and wear as well as gold," and found that in a short time they appeared like brass, and wish us to expose the sellers. We can do no such thing. We have no doubt that the writers got their full money's worth, and we do not regret that they have been taught a useful lesson. But there is one thing that we do regret, and deeply; it is, that these people should have such false ideas of personal adornment; that they should think it necessary to hang trinkets upon their persons in order that they may be acceptable to others. That they should so desire this kind of decoration that they are even willing to wear what they themselves know to be false, in the hope that others will not see that their jewels are bogus. If men and women who wear this stuff knew what impression they made upon others, they would throw it aside at once.

A CARD COMPANY

in Michigan is complained of by a correspondent in Illinois. This "Company"—we do not give their address, having no desire to advertise them—offer to send "a package of visiting cards and a handsome paper, three months, free, to any one sending the names and addresses of 10 boys." Our correspondent "H" sent the list and did not get the cards, but he did get the paper, which he sends us, with his complaint, and wishes us to expose this "Card Company" as a swindle. Did not "H" appear to be perfectly honest and unsuspecting, we should say that *he* deserved exposure quite as much as the "Card Company." After all we have said of the ways in which rogues and swindlers procure lists of names, and after we have over and again cautioned secretaries of societies not to send lists of their members to unknown parties, and even suggested that persons should not tell traveling agents and pedlers the names of their neighbors, here comes one who in the face of all this, for the sake of a few paltry visiting cards, does ten of the boys of his neighborhood a most serious injury, and perhaps brings great trouble to their parents. "H" no doubt thinks this rather hard language, but it is nevertheless true. We have not the least idea that he did this intentionally, or in any manner knowingly. He saw cards and a paper offered on certain conditions. He complied with those conditions, and received no cards, but did get the paper. He evidently was so angry that he had taken the trouble to send the list of "10 boys," and had received no cards, that he did not stop to consider the matter, and apparently disgusted with the paltry size of the paper, did not read it, but sent the sheet, "The Card Gazette," to us, with his complaint of the "Company." The Gazette consists of four pages, and when opened out full is almost the size of one page of the *American Agriculturist*, and there is a supplementary sheet of just half the size. Had "H" examined this sheet, he would have seen why its publishers wanted the names of 10 boys, and why we blame him for sending them. In short, this card business is a dodge for getting the names of young persons to whom this "Gazette" may be sent; the paper itself is a dodge for advertising things that should not be sold, and that boys (and men too) ought not to buy. There are advertised in this very small but very pernicious sheet such stuff as "Magnetic Love Powders, sure, safe, and reliable. Warranted to win the affection of any person in a short time. Perfectly harmless, and easily used, etc." This is by no means the worst, as there are books, pictures, and other matters, advertised in such a manner that any one with half an eye can see that they are "goods"—this paper calls them, but really "bads,"—of a kind that could not be sold openly, but all this roundabout machinery of cards must be resorted to, to induce well meaning persons like "H" to send secretly the names of "10 boys" to whom they can as secretly send their advertisements, and induce these boys to purchase things they would not dare to show to their parents or their brothers and sisters. We think that "H" has small cause of complaint as compared with the parents of the boys whose names he has thus wrongly used.

DONT SEND A NAME OR NAMES

of any one, men, women, or children, on any pretence whatever, to *unknown parties*, no matter if visiting cards or any other bait is used. In many cases all such attempts are apparently to get lists of names for improper use, as in the one here cited, or to accumulate them for sale. We have more than once stated that lists of names in any section of the country are offered for sale in New York and other large cities. Let all be careful how they help this generally doubtful, and often rascally traffic.

THE LOTTERIES STILL ALIVE.

Though under the ban of the United States law, (as far as that can interfere), and the laws of most of the individual States, the lottery, while severely crippled, is still alive. The fact that those concerned go to great expense in the endeavor to avoid the law, and run the risks of fine and imprisonment in carrying on the business, show how wonderfully profitable it must be, and should induce those inclined to purchase tickets to reflect—if such ever do reflect—upon the source of all the money so freely expended. They should know that it is the buyers of tickets who furnish the means, and that the chances (or at least the drawings) are so largely in favor of the lottery managers, that they have full purses, whatever may be the case with their patrons. Some skill is displayed in the documents now sent through the mails in defiance of the law. Instead of the former bold schemes, neat circulars with "blind" headings are sent, or the lottery scheme appears in the form of a neat newspaper, "the same with intent to deceive" the hurried P. O. clerks. Early in November the N. Y. police made a descent upon four of the places in which the tickets of the "Kentucky State Lottery" were sold, arrested the proprietors and seized the tickets. The confirmed lottery gambler is past cure; so long as tickets are to be had, he will somehow contrive to get them; and our warnings can only be of use to those who are novices, and find the inducements presented so tempting that they are inclined to try their luck. Some of these, more cautious than others, before they venture, write to us to know our opinion of this or that lottery. To all who are thus tempted, whether they have written for advice or not, we would say that in all but a few States, you, by buying a ticket, become accessory to a misdemeanor. The law, unfortunately does not punish the buyer, but by purchasing a ticket you, in most States, knowingly help another to violate the law, and are morally, if not legally, just as culpable. Besides this, recollect that the great majority of the "Gift Concerts," "Prize Distributions," or by whatever other name a lottery may be disguised, are

OUT AND OUT SWINDLES

from beginning to end; this we have shown to be the case in the exposures of the present year as well as in those given in former volumes.... Though the Red-man makes slow steps towards civilization, there are now and then indications that Mr. Lo (the poor Indian) is progressing, and we have now a case which shows that Mrs. Lo is not behind her husband. We know that the Indian can drink whiskey and play cards equal to the white man who taught him; that he is very fond of those ways of civilized life that allow the use of six-shooters, and breech-loading rifles; that in the means he will resort to in order to get powder, be it only a single charge, that he may shoot some game to keep his children from starving, he equals the wily schemes of the most civilized confidence man, but we did not know until recently that the red-man, or woman, was up to that refinement, that consumate flower of our later civilization of

ADVERTISING TO SELL RECIPES.

It is a very touching story which we find in a "Fashion Quarterly," and not the less affecting because it appears as an advertisement. Mrs. *Oakee Tubee*, it is her name—though we can't help thinking that "*Cedar-ee Tub-ee*" would be more durable, and we naturally wonder if Mrs. *Tub-ee* wears the *hoop-ee*.—But we digress. The story is in that most effective form, a dialogue, in which Mrs. Tubee is interviewed. She interviews well (another indication of progress) and simmered down the story is that Indians are never bald, and never have beards. They, unlike old Uncle Ned, always have hair "In the place where the hair ought to grow." We will pass by all the talk about the "Great Spirit," the "Medicine Men," who held the secret, and the particular "agony" any one would get who divulged the secret, and coming directly to the point, say that the superior length, blackness, thickness and persistence of the red-man's hair is due to the use of "*Escollucus*." That is a very good looking name, but to our notion it smacks of the 'pothecary shop rather than of the wigwam. Being "injun" it is of course made of "roots and barks," and it is a comfort to know that it grows everywhere, "North and South, East and West." But, it wouldn't do to have too much of a good thing, so when the "Great Spirit" taught about keeping the hair on the head, it at the same time said that "the face of the warrior must be smooth like a woman's." Hence the "*Sho-sue*," which not only destroys hair, but prevents it from ever growing again. Terrible to relate, this stuff "grows in every pond." One can learn something, even from a squaw; we have always wondered why Indians never washed themselves—except in the rainy season, when, there being no umbrellas, they could not help it. Now we know that it is because "Sho-sue" "grows in every pond," and would completely depilate them. The red-skinned warriors, in whose country we have lived, were not up to the "Sho-sue," and pulled out the beard with nippers made from a bit of sardine box or other tin. The story is told much in detail, but it winds up in a manner that shows Mrs. Oakee Tubee well advanced in the arts of civilized life. We are informed that any one who will send to Mrs. Oaktubee a string of wampum—we beg pardon—a civilized $1 greenback, will receive a "recipe with full directions." If that isn't an evidence of civilization, then we are no judge of the article. Were we in the betting line, we would wager a large apple that the recipe, if received, (Oaktubs may be so far civilized as to get the dollar and then forget), while pretending to give the ingredients to make these hair stuffs, would give to the articles names unknown to druggists, and moreover, anticipating this ignorance among the medicine men of the pale-faces, she had the same prepared, and would dispose of it for other greenbacks. Tubee's advertising is so civilized, that we feel quite sure she would be equal to Adee with his "Indian Cough-Plant," the venerable Inman, (we never like to use that name without the endearing Joe or Joey), with his "Corossa-apimis," and the rest of it, or to Mother Leggett, with her "Chee-ochee" and "Chee-Mouchons." We will back the civilized "salvage," Tubee, against any of them. Who shall say that our "Indian policy" (we don't know exactly what it is) is a failure! Oakee-Tubee—in spite of the fact that your name suggests washing-days and cold dinners—we with pride hang your copper-colored portrait in our Humbug Gallery, where you will shine among your pale-faced brothers and sisters, in evidence of the progress your race has made in one form of civilization.

New York State Dairymen's Association.—The Sixth Annual Convention of the New York State Dairymen will be held at Elmira, December 13 and 14. Several addresses will be made by prominent dairymen, and discussions will be held after each address, for which ample time will be allowed. Dairymen are urged to attend this convention.

California Fruit at the Centennial. The "Pacific Rural Press," in noticing the strictures of the "Gardener's Monthly" upon the conduct of those who had charge of the California fruit at the Centennial, states that the sending of the fruit was entirely a private enterprize. The State made no provision for the expenses of an exhibition of fruit, and the persons who took it there did so not to show the fruit, but to sell it. The mistake seems to be that these men were allowed to exhibit at all; they made a convenience of the occasion, and the facilities afforded by the Exhibition, and under color of exhibiting, found a ready and inexpensive market.

Dried Bananas are soon to be in our markets. According to a Hawaiian paper an Alden's drying apparatus is to be put up for drying bananas; the owner expects to find his market in this country via San Francisco. We are not told what is to be done with them to make them eatable.

Asbestos Roofing.—In many cases it is expedient to cover a building with some substitute for shingles or tin. Among the various roofing felts and other materials of the kind, that made by H. W. Johns, in the composition of which asbestos is used, is regarded by builders and others as the most useful.

A Baby Swing was described by Aunt Sue in her "Chats)' for last month (Nov.) She did not know, nor did we, that the swing she described is so like a swing that was patented several years ago, that one in making it would infringe upon the rights of the holder of the patent. It is generally supposed that any one has a right to make a patented article for his own use, and that the patent only prevents making the article for sale. This, which has been published, by some who did not investigate the matter, is a great mistake. Only the holder of the patent, and those authorized by him, have a right to make the article covered by it. In this present case the swing was patented by Dr. G. H. Lupton, M. D., (formerly of Cleveland, O.,) now of Middletown, Del., in 1867, and the patent will not expire for some 8 years. No doubt the swing is a very good one, as many thousands have been sold under the name of "Lupton's Juvenile Swing," but our friends have no right to make one like his. Of course, knowing the facts, it is an act of simple justice to give them to our readers, and we are sure that none among them will willingly interfere with the rights of another.

Book Notices.—The crowded state of our columns prevents printing notices of a number of books, which must be postponed until another month.

Herd Book of the Ayrshire Breeders' Association.—We have received a copy of the New Herd Book of the Ayrshire Breeders' Association. It has been carefully edited by J. D. W. French, Esq., of Andover, Mass., who, we are informed, has given his services altogether gratuitously, as a labor of love. To collate and revise so many pedigrees as are contained in this record, is no light task, and Mr. French is entitled to the thanks of Ayrshire Breeders, for his services. The book is supplied by the Association at $3.00 a copy, free by mail. Applications may be made to Mr. French.

Give your Name and Address.—"Admirer of the Agriculturist." Although you are an admirer of the *American Agriculturist*, we prefer to have your name and address when a request is made for information regarding patents. We never publish names of inquirers in full, and even suppress initials when requested, there is therefore no reason why correspondents should withhold their names. We can reply to no questions from parties who do not care to give their names.

A Text-Book on Veterinary Obstetrics.—A much-needed and very valuable work on Veterinary Obstetrics, and the diseases incident to parturition in our domestic animals, is now in course of publication by Messrs. Baillière & Co., of King William street, London. The author, George Fleming, is the well-known English veterinary surgeon, and author of many valuable books on veterinary science and practice. The work is issued in parts, of which two have already appeared, the price of each part being 2s. 6d. sterling. An examination of the two parts thus far issued convinces us of the value of this work both to the professional veterinary practitioner and the stock-breeder.

Diseases of Poultry.—The best and most practically useful book on the diseases of poultry that we have seen, is the one entitled as above, by Mr. Geo. P. Burnham, of Melrose, Mass. The author is a practical poultry man, and knowing the advantages of prevention above the troubles and risks of cure, makes a special point of the necessity of preventing diseases. Few poultry-keepers care to bother with physic, and prefer to resort to the summary use of the hatchet, to end the ills their fowls are subject to. This is a losing business, and it is important, as a matter of profit, to know how to keep poultry in health. This book has some excellent advice in regard to this, and the author's remarks about vermin are especially good. Sent from this office, post-paid, for 50 cents a copy.

International Dairy Exhibition at Hamburg.—The Dairy Association which was formed at Bremen in 1874, has determined to hold an International Exhibition of dairy products at Hamburg in 1877, opening February 28, and continuing until the 4th of March following. All dairy products and utensils will be admitted, also carriages for milk, appliances for keeping it, and machinery for condensing and otherwise preparing it; also food for cattle, other than grain, straw, and hay; scientific articles, models, and plans of buildings, and means of education for the business of dairying. Applications for space must be made by the 15th of December to the Exhibition Committee, Hamburg.

Advice in Regard to Creameries.—"B. D. B.," Shippensburg, Pa. Where dairies are small and scattered, and milk can only be collected once a day, we fear the profitable working of a creamery would hardly be possible. Farmers ought to deliver their milk; if it is collected by the creamery, the price paid for it should be reduced. The morning's milk might be collected along with the evening's milk, but some loss would result. If no collection is made on Sundays, the milk of that day would be kept and worked up by the farmer. The best way probably would be to procure advice from an expert, like X. A. Willard, Little Falls, N.Y., or L. B. Arnold, Rochester, N. Y., in regard to the difficulties to be overcome. Either of these gentlemen would give advice professionally for a reasonable fee.

Sweet Corn.—"R. D.," Vineland, N. J. In neighborhoods where green corn is grown for the New York market, there will be found one or two local varieties, which have been established by selection, and are much better for the locality than any other. This is especially the case with early corn, as a few days are, in this, often of great importance. Earliness and productiveness are the first essentials, then the ear should be of good size, regularly and well filled, especially at the tip; in early corn the eating quality is not so much regarded, as the others, but other things being equal, the better it is, the more readily will one secure regular customers. You will no doubt find among your neighbors an early variety better suited to your locality, than you can get elsewhere. For later, and the general crop, we have seen nothing better, in all respects, than the "Triumph." The "Asylum" and "Stowell's Evergreen" are both excellent late varieties.

Inflammation of a Horse's Eye.—"T. E. M.," Cuba, O. A speck in the eye of a horse, resulting from inflammation, may be absorbed in time, if a return of the cause is guarded against. A good cooling dressing for the eye, is four grains of sugar of lead, dissolved in one ounce of rain water; or sulphate of zinc may be used instead of the lead. A rag, saturated with the solution, should be hung over the eye, and the animal kept in a dark stable for some days. The absorption of the speck may often be hastened by blowing into the eye, through a goose-quill, a pinch of burnt alum.

A Dip for Sheep.—"Mrs. M. O. D.," Spartansburg, S. C., sends the following recipe for a dip for sheep as a cure for scab and ticks, which she obtained from a Scotch shepherd in Texas, who sold 16,000 lbs. of wool in one season in San Antonio. The dip is as follows: "Boil 25 lbs. of tobacco in 100 gallons of water, add 12 lbs. of sulphur, 1½ lbs. of arsenic, and 2 boxes of concentrated lye. The tobacco is boiled until the leaf is gone from the stalk, and the sheep are dipped in the mixture when it is only lukewarm.

Diarrhea in a Horse.—"C." Diarrhea is sometimes caused by a tenderness in the bowels, that is aggravated by work or rapid driving. When it is thus caused, the horse should be rested for a considerable period, and only driven very slowly, and for short distances, until recovered. The food should be changed from whole to ground grain, the hay should be cut and moistened, and the ground feed mixed with it. In place of oats, we would give one part of linseed meal, two parts of rye, one part of coarse wheat middlings, and two parts of oats, all very finely ground together. In each morning's feed we would give a dram of sulphate of copper for a few weeks. Feed lightly, and four times a day.

A Turf Heap.—"W. A. C.," Yonkers, N. Y., has a lot of turf from a boggy piece of ground. He has built it into a pile 4 feet high and 10 feet wide, and mixed oyster-shell lime through it. He asks if, after allowing it to lie during the next winter and summer, it will be suitable to apply to a lawn, and if there is any better plan of using it.—We should not think of using this on the lawn any more than we would feed popcorn to the pigs—the pigs would no doubt thrive as well as on common corn. This sod compost would be a useful dressing to the lawn, but no better, or not so good, as one of articles readily obtained, whereas, if one wished to purchase a few loads of such compost, it would be difficult, if not impossible. A gardener would jealously guard such a treasure as this heap, and look grudgingly at every shovelful taken from it. By adding half as much stable manure, and re-building the heap two or three times during the summer, to get all thoroughly incorporated, our friend will have a splendid compost, requiring perhaps only the addition of some sand to lighten, to fit it for nearly all greenhouse plants. Such a compost would be valuable to put into a hot-bed, or boxes used for raising seedlings, and for all purposes where the best possible soil is required. If he wishes to give choice fruit or ornamental trees a good start, this may be mixed in with the soil at planting. It would be difficult to find a substitute for so valuable a compost, while for the lawn, guano, bone, ashes, or fine manure, without the decomposed turf, will answer quite as well.

Thatch for a Poultry-House.—"O. H. A.," Winchester, Va. A thatched roof is the very worst that could be selected for a poultry-house. It would harbor hosts of vermin, which could never be ejected from it. We would rather have no roof at all, than one of thatch. The best is one of boards, covered with tarred roofing, and whitewashed thoroughly beneath.

Books for a Stock Farmer.—"D. J. V.," Jersey City, N. J. For one who wishes to devote his attention to sheep, pigs, and poultry, we would recommend the following books. Stewart's Shepherd's Manual. Randall's Fine Wool Husbandry. Wright's Poultry Book. Burnham's Diseases of Poultry. Harris on the Pig, and Jennings' Diseases of Cattle, Sheep, Swine, and Poultry. The continual references to these subjects in the *American Agriculturist*, will also be found useful.

Wood Ashes.—"C. L. C.," Jersey City, N. J. Wood ashes may be procured by the boat-load in New York, at the prices quoted in our market reports. Chas. V. Mapes, 158 Front st., N. Y., could procure them for you perhaps in less quantities.

Remedy for Sand-Cracks.—"W. W. S.," Center Co., Pa. To cure sand-crack, the edges of the crack should be pared, and the hoof about the crack carefully roughened with a file, and cleaned from grease with spirits of ammonia, or ether. Then a cement, made by melting together two parts of gutta percha, and one part of gum ammoniacum, should be applied to the crack, so as to cover it completely. The hoof is then to be bound up to protect it from blows. The cement may be molded while warm into sticks, and a piece broken off when wanted for use, and softened by heating gently.

Milking Apparatus.—"Mrs. N. S. B.," Marion Co., W. Va. Milking machines are, so far, failures. They do not empty the udder, and in time the cow is dried up. An injured teat or udder may be relieved of milk by the tube described in the *American Agriculturist* of November, but we would not use them as a regular thing. A stricture in the teat may be remedied by means of a bougie having small lancet points upon its sides, which cut the skin to a proper depth as it is passed upwards. Such an instrument is made by Dr. Horne, Veterinary Surgeon, Janesville, Wis.

Hay for Fuel.—"C. G. T.," Lincoln, Neb. —The method in use for converting hay into fuel is to twist it very tightly into ropes, which are then knotted. In this condition the combustion of the hay is somewhat retarded. With the immense peat beds in your State, there should be no need to resort to such a poor device for procuring fuel. Many of the large sloughs, when dry in summer time, ought to furnish peat of fair quality.

Marsh Mud and Gypseous Marl from Nova Scotia.—We have received a sample of gypseous marl from the marshes of Nova Scotia, sent by Mr. William Manning, of Portland, Me. This marl contains by analyses, 2 per cent of potash, 1 per cent of phosphoric acid, with some organic matter, sulphate of lime, carbonate of lime, magnesia, and other fertilizing matter. As it can be procured for 60 to 70 cents a ton on board a vessel at the Bay of Fundy, it is probable that in some localities near the coast it may be found profitable to use as a fertilizer. On exposure to the weather, it falls to an impalpable powder, and is easily applied to the soil. Mr. Manning states that it has been used on grass lands in Maine with satisfactory results.

The Best Fowl.—"H. C. F.," Ashland, Neb. There is much difference of opinion as to which is the best fowl to keep. After trying several kinds, we have settled on the Light Brahmas, as best for *us*; these are good layers, good sitters, fair eating, very handsome, very tame and docile, can not fly, and are too lazy to scratch in the garden.

"Butternuts."—"W. L. B.," Harford Co., Md., bought some trees which were represented to be "the real butternut of the confectioners, a three-cornered nut, with a hard shell," but he now thinks they are "the

same as we call white walnuts." This is a very mixed case. The three-cornered nut of the shops is not to our knowledge ever called "Butternut," though it is often called "Cream-nut," but more frequently "Brazil-nut," and "Castanea." It comes from Brazil, and is unlike the true Butternut in every respect; it is not known to our nurserymen, and you could no more succeed with it, than you could with the Banana. The "Butternut" is closely related to the Black Walnut, but has a longer fruit; both of these differ from the "White Walnut," or Hickory, in having very rough nuts, to which the husk adheres, and does not break away as in all the hickories. If any one has sold you a tree that would bear the three-cornered nuts of the shops, he has committed a fraud.

Indigestion or Staggers in Pigs.—"P. B. R.," Portage Co., O. The symptoms of what are called "staggers" in young pigs are, turning around and staggering about, seeming blindness, and turning of the neck to one side. It is caused by indigestion, and congestion of the food in the stomach from over-feeding or weakness. The remedy is to give a tablespoonful of linseed oil, or the same quantity of Epsom salts, dissolved in warm water, and feed very lightly for some time with thin oat-meal gruel, given cold. The trouble may be prevented by shortening the feed to about half the usual ration, as soon as the pig begins to look unthrifty, and when it begins to grow again, increase the feed gradually. More pigs are *starved* by over-feeding, than by short commons.

English Sparrows.—H. McIntyre, Ala., asks what the English sparrow could do in ridding them of the "cotton caterpillar." The sparrows are domestic birds, and live around dwellings. They require houses, or if building, a dense growth of ivy or a thatch afford convenient places, they will build their nests in these. They have about three broods a year, and as they feed their young on animal food, the number of insects they destroy is very great. So far, all is in their favor, but the old birds do not live entirely, if largely, upon insects, and the young, when fledged, also require other food, and they devour grain, seeds, and small fruits, and in Europe do so much mischief that they are classed among the pests. They do not migrate, but remain all the year round, and when there is much snow they must be fed. In Europe they are charged with attacking and destroying the buds of fruit and other trees; this might be prevented by supplying them with food and water, and perhaps in your State they could find food every day in the year. European farmers who regard them as a nuisance strive to reduce their numbers by destroying their nests, and do not take into account the good they may do early in the season. Having both sides of the question in brief, you can judge if the balance is likely to be, in your case, in favor or against the introduction of the birds.

The Cheapest Feed for Cows.—"Amateur," Hudson, Wis. Wheat bran at $8 per ton is the cheapest and best feed for milk-cows. It contains the salts needed for the milk, and a large proportion of fat which goes to help make cream. It is more valuable than shorts at double the price.

Reducing Bones by Sulphuric Acid.—"C. W. C.," Richmond Co., Va. The method of reducing bones by sulphuric acid in a small way is as follows: The bones, broken as finely as possible, are heaped in a shallow box of plank, and thoroughly wetted. Some of the acid is then poured over them, *taking great care* to avoid splashing. The mass is then shoveled over and mixed. More water is poured over it, and then more acid, until about 36 or 40 lbs. of acid to the 100 lbs. of bone has been used. The heap is then left to heat and decompose. After 24 hours it may be worked over with the shovel, when it will be pasty or soft. It may be dried by the addition of earth free from lime. Some of the mills described on page 456, of the present number, may be used to grind the bones fine, in which condition they are more easily reduced by the acid. The process is very disagreeable and somewhat dangerous to those not accustomed to chemical manipulations, and one that few will care to repeat. When a good phosphate can be procured for the same price as ground bone, we can not advise farmers to make it themselves. We would rather use the fine-ground bone.

Poultry Keeping and Gardening by Ladies.—"Subscriber." There is no reason why a lady should not undertake the business of gardening and poultry keeping, if she takes a fancy for it. It is as respectable and proper a way of securing a livelihood for a woman as for a man.

Size of a Market-Garden.—"J. B. Q.," St. Louis, Mo. Twenty-five acres is ample for a market garden. By good management an average of at least $400 an acre ought to be taken every year, as two or three successive crops should be grown in each season. Success in this business, however, depends not so much upon hard work as upon good and skillful management.

Irritation of the Kidneys or Bladder.—"O. T. R.," Montgomery Co., Kansas. When a horse is suffering from irritation of the bladder or kidneys, the symptoms are as follows: he makes ineffectual, frequent efforts to stale, turns his nose towards the flank, which is the seat of pain, groans, lies down and rises frequently and repeatedly, these spasms recurring every 20 or 30 minutes. Hard work brings on or increases the spasms. This affection generally becomes chronic, and appears after taking cold, or any severe labor. We have relieved it, in the case of one of our own horses, by giving one dram of nitro-muriatic acid and four drams of tincture of rhubarb, in half a pint of rain water, daily, and have prevented its recurrence by avoiding corn as feed, and using rye and oats, ground with some linseed-oil cake, and being careful not to over exert the animal at any time. Nitro-muriatic acid is made by mixing Nitric Acid with twice its bulk of Muriatic Acid. A slight effervescence takes place when they are mixed; when this has ceased it should be kept in a glass stoppered bottle and handled with care, as it is more corrosive than either acid by itself.

"A Disease like Founder."—"W. M. S.," Aiken, S. C. To give any reasonable advice about your hogs, we must know the symptoms, and what has been their feeding and treatment for some time past. The above phrase is so vague that we can suggest no remedy. We surmise that paralysis is meant, but can form no judgment about the case as it is presented.

Winter Oats.—"G. S. C.," Fishers, N. Y. We are not at all sanguine as to the success of Winter oats, in a locality so far north as yours. They are largely grown in the Southern and Middle States, and if they can be acclimated in the northern portion they would without doubt be valuable. Where the winter temperature is not only low, but remains so during long periods, these oats should be planted only as an experiment.

Prize Essay on Diseases of Swine.—The Berkshire Swine Association has announced an offer of $100 for the best approved essay on diseases of swine, their causes, prevention, and remedies. The competing essays are to be sent to the office of the Secretary of the Association, at Springfield, Ill., before Jan. 1st, 1877. The essay to which the premium may be awarded will be published in the forthcoming second volume of the "Berkshire Swine Record." The awarding committee are Prof. Law, of Cornell University, Prof. Smith, of the Toronto Veterinary College, Hon. T. C. Jones, of the National Life Stock Journal, and E. G. Bedford, Esq., of Kentucky.

Butter Floating on Milk.—"M. M. M.," Clandboye, Manitoba. It is not uncommon for small particles of butter to be formed during the milking of cows that give more than usually rich milk. The butter globules become broken either in the udder or in the pail, the thin pellicle which covers them being ruptured, and the minute particles of butter cohere and form small masses, visible to the eye. It is not a defect, on the contrary, it indicates that the cow is an excellent butter-maker. It sometimes happens with ordinary cows, when the milk from neglect has not been drawn at the usual time. The pressure in the udder may then cause the globules to become broken and the freed butter to gather.

Hay and Cotton Press.—"P. R. F." Barton, Ark. The hay presses in general use may also be used for pressing cotton. Information about these presses may be procured of Messrs. Dederick & Co., Albany, N. Y., who manufacture several kinds.

Thermometer Churns.—"R. F." There is no necessity to have a thermometer fixed to the churn. The risk of fracture is probably the reason the churns having fixed thermometers have gone out of use. For a family churn, the "Blanchard" is chosen by many; the "Bullard Oscillating Churn" is well liked by others. Perhaps the best plan would be to write to the parties who advertise churns, and procure descriptive circulars, and choose that which seems most suitable. Out of about 1,000 different kinds of churns in use, and many of them really good ones, it is a difficult thing to justly decide which is the best,

Weakness in Chickens.—"C. D. J.," Livingston Co., Mich. When fowls, otherwise healthy, become weak on their legs, stagger and droop their wings, it is a notice that they need some new blood, and the roosters should be changed at once. The chickens would be helped by having a small pinch of copperas each daily, and plenty of red pepper in their food for a few days.

Reports of the Judges at the Centennial.—"V. W. K.," Winne Co. The reports of the judges at the Centennial will no doubt be officially published at some future time—probably not before Congress meets. As to the relative merits of the machines tried there, it would not be fair for us to make any statement, lest undue weight should be given to it. There was no competitive trial, but the machines were merely exhibited, and that under very unfavorable circumstances.

Basket Items continued on page 473.

The First Prize Jerseys at the Centennial.

The owners of the principal prize Jersey Cattle, at the Centennial Exhibition, have favored us with photographs of their animals, from which the engravings upon our first page have been made. We present these portraits as an instance of what can be done by photography in contrast with the fanciful drawings of certain artists. That there are defects and distortions in photography is known; but the practiced eye can detect these and make allowance for them. There are, however, no deceits in this process. The form of the body is not changed, nor its rounded portions altered into straight lines and squares, nor the resemblance of the portrait to the animal only to be discovered when the spectator exercises his fancy or is told by the label. Generally it is recognizable at once, although the work has passed through the hands of the artist who finishes the photograph, engraver, electrotyper, and the printer since it left the camera.

The portraits here given are of great interest, as they represent what are probably the best Jersey cows in the world. The Jersey cattle collected at the Centennial Exhibition were remarkably select. They competed not only for a valuable premium, but for a high honor, and the race was well and numerously represented. Doubtless no better collection of Jerseys were ever gathered together, and our formerly expressed opinion, that in this country we have better Jerseys than are to be found elsewhere, we consider as justified by this exhibition. From this collection the prize winners were selected with painstaking care and deliberation. The scale of points of the American Jersey Cattle Club was the test of merit. Color, very properly, was entirely ignored, for a good cow may be of any color, and cows can not, ordinarily, be bred for beauty, in preference to usefulness. The premiums competed for were offered by the American Jersey Cattle Club as follows: $300 for the best herd, consisting of one bull and four cows; $250, each, for the best bull and cow, and $100, each, for the second best bull or cow; in all $1,000. The competition for these prizes, and for the honors attached to them, brought out a very large number of the best animals, more in fact than the aggregate of all other breeds on exhibition.

The Herd Prize was awarded to Mr. Charles L. Sharpless of Philadelphia for his bull "Chetten Duke," and four cows, "Milkmaid," H. R., "Black Bess," H. R. 1788; "Tiberia," H. R.; and "Lady Maud," H. R. 3795. The portraits of all of these cows are shown in the engraving, and we regret that we are not able to give the portrait of the bull, as it was not possible, after many endeavors, to procure a photograph, on account of the animal's restlessness. "Chetten Duke" is out of Mr. Sharpless' "Duchess," a noted grand cow, and inherits his dam's grand qualities. These cows are all heavy milkers, and butter makers, "Lady Maud," for instance, the past summer, as a two-year old only, gave 92 quarts of milk in 7 days, from which 9¾ lbs. of the best butter was made. She was giving a month ago, on grass alone, 10 quarts of milk per day, 6½ months after calving. The first prize cow was "Niobe," H. R. 99, who is the property of Mr. Samuel J. Sharpless, also of Philadelphia. This cow, a model Jersey, is 18 years old, but still in prime condition of health and usefulness. She seemed to us *the* Jersey, *par excellence*, of the whole exhibition, and recalled the style of cow which used to be popular before breeders gave so much attention to beauty

of form, smoothness of outline and solid colors. The second prize cow was "Cyrene," H. R. 137; she is 9 years old, yellow and white, a fine cow, having excellent milking properties. When the portrait was taken at the Exhibition, the cow was nearly dry, being due to calve this month. The first premium bull was "Litchfield," solid fawn in color, owned by F. R. Starr; the second prize was taken by "Bellini," owned by H. J. Lothrop, a very beautiful animal, but yet having good useful qualities. We have not been able to procure portraits of these, or we would gladly have given them.

Ogden Farm Papers.—No. 82.

BY GEORGE E. WARING, JR.

A correspondent in Connecticut writes about his cows, which he feeds as follows:—In the summer, fodder corn, brewers' grains, corn-meal and wheat bran. The daily average per cow being 2 quarts of meal, 4 to 8 quarts grains (or bran when grains are short). The supply of fodder corn is unlimited. There is little or no pasture. The same in winter, with hay and roots instead of corn fodder. Often a slight increase in the amount of corn-meal.

With this treatment the cows go to milk or to fat—if to fat they are slaughtered. "This plan, on the average, works well, but for the last three or four years I lose every year a cow or two from milk-fever—always in September. The cow calves all right, appears well at the start, but in 24 hours the fever symptoms appear, and in 36 hours more she is dead. There appears to be no help, always fatal. I thought perhaps one cow a year ago was about the percentage of loss I ought to expect, but last September I lost two in a fortnight, which caused me to think that there might be something wrong in my system of feeding. As the cows approach calving time, say 7 months, I stop the meal and try to dry them off, but as I keep the other feed well up to the quantity, they do not always dry."

He then asks whether there is anything in his feeding which tends to produce fever. He suggests that perhaps cotton-seed meal in place of corn-meal would be an improvement.

The proper percentage of loss by milk-fever is *precisely nothing at all.* It is possible that an old cow, whose race is run, may take this occasion for departing, but with an animal in good health I believe the disease to be due only and always to overfeeding. A cow about to calve should be kept in what would ordinarily be called good thrifty condition, but everything like *high* condition should be avoided until the flow of milk is well established. Then, with good feeding, she will without danger keep up a good flow throughout her milking period. But the change of conditions which take place when the secretion first begins to break loose, and when the milk-giving organs first come into action—this occurring at the time when the birth of the calf has already taxed the vital energies to a serious extent—is always attended with more or less feverishness. Under a judicious system of feeding, the milk secretion will be slowly developed, and after the cow has somewhat regained strength, and the natural flow has set in, it may be very soon carried to its full amount by stronger feeding. Some good, in the way of prevention, may be done by giving a medicine which tends to check the action of the heart—like aconite—but the sovereign preventive of milk-fever in a cow is to be sought in a judicious system of starvation. For at least a month before calving she should have only hay—and hay of ordinary quality at that; during the last two weeks the poorest hay and straw should be substituted, and after the calf is dropped, she should have for 24 hours little more than air itself, and then a warm bran mash. After this she may have a little hay, and after another 24 hours it is safe to begin gradually increasing the food until at the end of the first week she is up to her full rations again.

A new element has come into the discussion concerning the different methods for setting milk in deep cans. The question as to whether or not it is best so to set milk, seems to be difinitely settled, and there are hardly two opinions on the subject among those who have given it a fair trial, as to its convenience, compactness, and its general applicability. Wherever ice is plenty, Hardin's refrigerator system is attracting attention. A large dairyman asks: "How much ice, under this system, will be required to treat the milk of 50 cows, making 300 pounds of butter per week?"—This question can not be answered with scientific accuracy, because of the different conditions under which the ice is to be used. The loss of heat through the sides of the refrigerator, the leaking out of cold air through the imperfect fitting of the door, and whenever the door is opened the entire change of the air within, would all have some influence upon the question; but supposing the full effect of the ice to be available, the result would be about as follows:

A pound of ice, in melting, takes up the heat that would be required to affect the temperature of 142 pounds of water, one degree. Milk, when it is drawn from the cow, is of a temperature of between 93° and 99°. From the moment it leaves the teat, until it is strained into the cans, it is constantly losing heat. Perhaps it would be fair to estimate this loss at from 8° to 10°, and to assume that the cans, when placed in a refrigerator, are at 90°. We will suppose that it is to be reduced according to Hardin's system to 40°, which gives a reduction of 50° to be effected by the melting ice. If the 50 cows average 10 quarts per day, (2.15 lbs. per quart), the total weight will be 1,075 lbs., all of which is to be reduced 50°, which would require the cooling power of 378½ lbs. of ice. It would of course be *possible* to make the refrigerator so perfect, that practically all of this cooling effect could be made available. If 12 quarts of milk are required for 1 pound of butter, the dairy will yield (500 quarts) 41⅔ lbs. of butter, and if ice costs ½ cent per pound, the expense will be 3 cents on each pound of butter, an amount which the great economy in utensils and cleaning work at the dairy, and the greatly improved and uniform quality of the butter, would much more than pay for. At the same time, 3 cts. per pound for this element of butter making seems high, and I should recommend, even where the refrigerator system is to be used, that the cans be first placed in a vat of water which will reduce the temperature to 60°. This will leave but 20° of cooling to be effected by the ice, and make a charge of less than 1 cent per pound for this item. Even if the water for this purpose is to be pumped by hand, the expense of pumping will be slight—far less than would be that of using ice to reduce the temperature from 90° to 60°.

In our dairy we rarely reach a temperature less than from 50° to 54°, and the result is entirely satisfactory. During such drouths as that from which we suffered this year, we have found it necessary to put a little ice into the water-vat on first setting the milk, but ordinarily, with spring water at hand in sufficient quantity, we have had nothing but the moderate expense of pumping by wind-power, and even this expense has been more than compensated for by the convenience of a good supply always at hand for watering the stock.

Perhaps the value of any system for butter-making is as well decided as in any other way by the effect of a change of butter-makers. Our dairy woman, who had been in charge of the work for three years, left at short notice about the middle of October. Her successor, the fifth we have had since we began operations, had only a few weeks instruction before the other left, and has kept up the standard from the start. Since we adopted the deep can system, we have had four different dairy women—all Germans—and all entirely new to the business, and there has never been any material variation in the quality of the product, save in the summer of 1874, when we bought from a neighbor an amount of milk more than equal to our own product. This neighbor has no Jersey blood in his herd, and occasionally, in bad weather, there was a slight falling off in quality from this cause. But given a head of Jersey cattle, with deep cans, good water, and a Bullard's churn, the best of "gilt-edge" butter will almost make itself; with decent attention to cleanliness and regularity, and with a fair quality of food for the cattle—a perfect result is a matter of certainty.

I may add, too, that the amount of labor required under these circumstances to carry on the work of the dairy, is not more than half so great as that where shallow pans are set in a room of the temperature of the external air, or even in the cellar, and producing butter of varying quality.

In the last number of these papers I made the mistake of using—when speaking of the judging of Jerseys at the Centennial—a copy of the Scale of Points which was printed while we were discussing its adoption. It was considerably modified before it was finally adopted, and the most satisfactory way to correct the error is to give the scale as finally established by the Am. Jersey Cattle Club:

SCALE OF POINTS FOR COWS.

Points.	*Counts.*
1. Head small, lean, and rather long	2
2. Face dished, broad between the eyes, and narrow between the horns	1
3. Muzzle dark, and encircled by a light color	1
4. Eyes full and placid	1
5. Horns small, crumpled, and amber color	3
6. Ears small and thin	1
7. Neck straight, thin, rather long, with clean throat, and not heavy at the shoulders	4
8. Shoulders sloping and lean; withers thin; breast neither deficient nor beefy	3
9. Back level to the setting on of tail, and broad across the loin	4
10. Barrel, hooped, broad and deep at the flank	8
11. Hips wide apart, and fine in the bone; rump long and broad	4
12. Thighs long, thin, and wide apart, with legs standing square, and not to cross in walking	4
13. Legs short, small below the knees, with small hoofs	3
14. Tail fine, reaching the hocks, with good switch	3
15. Hide thin and mellow, with fine soft hair	4
16. Color of hide where the hair is white; on udder and inside of ears, yellow	5
17. Fore-udder full in form, and running well forward	8
18. Hind-udder full in form, and well up behind	8
10. Udder free from long hair, and not fleshy	5
20. Teats rather large, wide apart, and squarely placed	6
21. Milk-veins prominent	5
22. Escutcheon high and broad, and full on thighs	8
23. Disposition quiet and good-natured	3
24. General appearance, rather lean than fleshy	6
Perfection	100

In judging heifers, omit 17, 18, 19, 20, and 21.

The same scale of points shall be used in judging bulls, omitting Nos. 17, 18, 19, and 21, and making moderate allowance for masculinity.

Note.—It is recommended that Judges at Fairs do not award prizes to animals falling below the following *minimum* standard, viz.: Cows, 70 counts; Heifers, 55 counts; Bulls, 50 counts."

Science Applied to Farming.—XXIV.

BY PROF. W. O. ATWATER.

The Editor of one of our best agricultural papers recently remarked that farmers now read and understand scientific material that, ten or fifteen years ago, would have been passed over like so much Greek. Frequent illustrations of the truth of this occur in the inquiries I receive respecting fertilizers. To answer these I must continue farther the topic discussed last month—the removal of fertilizing ingredients by crops and their re-supply by commercial fertilizers. The following table, computed from the figures in the table in No. XVIII of this series (June) will give a general idea of the amounts of the important ingredients of plant-food removed from the soil by different crops:

Note, that I am simply speaking of commercial manures as a means of supplying the food ingredients needed by our crops, and not discussing the question whether it will be most profitable in any given case to buy such fertilizers, or to depend on tillage, farm manure, or green crops, to supply the needed materials. Bearing in mind what was said last month, and previously, about the calculation of formulas for fertilizers, and the fact that *nitrogen*, *phosphoric acid*, and *potash*, are the most important ingredients, let us notice how much of these is furnished by our ordinary commercial fertilizers, and at what cost.

Table 35.

MATERIALS REMOVED FROM THE SOIL BY VARIOUS CROPS.

	Sulphuric Acid.	Phosphoric Acid.	Lime.	Magnesia.	Potash.	Nitrogen.
TOBACCO.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Leaves, 1,800 lbs., 1,260 lbs. dry	14	7.5	73	17	71	49
Stalks, 1,100 lbs. dry	3	15	15	2	47	33
Total	17	22.5	88	19	118	82
RYE.						
Grain, 25 bushels=1,400 lbs	0.3	11.8	0.7	2.9	7.8	24.6
Straw, 3,500 lbs	3.8	7.3	12.2	3.9	27.3	14.0
Total	4.1	19.1	12.9	6.8	35 1	38.6
OATS.						
Grain, 30 bushels=960 lbs	0.4	6.0	1.0	1.8	4.2	18.4
Straw, 2,000 lbs	2.6	3.8	7.2	3.2	17.8	11.2
Total	3.0	9.8	8.2	5.0	22.0	29.6
WHEAT.						
Grain, 20 bushels=1,200 lbs	0.1	9.5	7.2	2.4	6.4	25.0
Straw, 3000 lbs	3.3	6.6	8.1	3.3	18.9	14.4
Total	3.4	16.1	15.3	5.7	25.3	39.4
CORN.						
Grain, 50 bushels=2,800 lbs	0.6	16.5	0.8	5.6	10.4	44.8
Stalks, 6,500 lbs	7.8	34.5	26.0	16.9	62.4	31.2
Total	8.4	51.0	26.8	22.5	72.8	76.0
HAY.						
Mixed Grasses, 1½ tons=3,000 lbs.	7.2	12.3	25.8	9.9	39.6	46.5
POTATOES.						
Tubers, 150 bushels=9,000 lbs	5.4	1.44	1.8	3.6	51.3	30.6

I know of no better way to do this than by referring to the actual experience of farmers in Connecticut. During the past year a large number of samples of the fertilizers sold in this State have been analyzed at the State Agricultural Experiment Station. The list includes a considerable number of the leading brands sold in the East and South. Taken as a whole, it doubtless gives a fair exhibit of the condition of the fertilizer market through those parts of the country, save that it probably contains a much smaller proportion of low grade articles, while the prices average lower than in sections more remote from commercial centers and where no fertilizer Control System is in operation. The analyses given in the following table, are, with a few exceptions, taken from Circular No. 4 of the Station.

The names of the manufacturers, importers, or sellers of the fertilizers in this table are omitted, because, in the way they are here used, the comparisons might in some cases be odious. Suffice it to say that they came from Baltimore, Newark, New York, Boston, Chicago, and various places in Connecticut. Let us notice now, the

Amount of Nitrogen, Phosphoric Acid and Potash

they contain. Of the superphosphates without nitrogen, sometimes called "Plain Superphosphates" or "Acid Phosphates," No. 5 furnishes 10.27 per cent of soluble phosphoric acid, or 10¼ lbs. in 100 lbs. of the fertilizer, while No. 53 has 23¼ per cent. The highest per centage of soluble phosphoric acid in the nitrogenous superphosphates is in No. 128, viz.: 11.67 per cent; the lowest in No. 25, viz.: less than one-half of one per cent. The "Rectified" Peruvian Guano, No. 57, furnished about 10, and the "10 per cent Ammonia Standard," Nos. 108 and 137, about 5 per cent each of soluble phosphoric acid. The percentages of Nitrogen are nearly as variable as those of Phosphoric Acid. In the Ammoniated Phosphates they run from 1.96 to 5.36; in the bone manures from 2.36 to 4.03, and in the fish manures and animal refuse from 6.66 to 13.19 per cent, and so on. A still more interesting point, however, is the

Cost of Nitrogen, Phosphoric Acid and Potash per pound.

Among the nitrogenous superphosphates the nitrogen costs 21 cts. per lb. in No. 117, and 42.5 cts. per lb. in No. 120. It is furnished in the Rectified Peruvian Guano, No. 57, at 17.9 cts., and in the 10 per cent "Ammonia Standard," No. 137, at 19 cts. per lb., while in the Fish Scrap, No. 131, it goes down to 10.3 cts. per lb. So likewise the soluble phosphoric acid runs all the way from 10.7 cts. per lb. in the Rectified Guano up to 25.5 cts. per lb. in No. 120.

Advertised Composition and actual Analyses.

I believe that nearly all of the larger manufacturers and importers of fertilizers sold in Connecticut, intend that the published analyses of their wares shall fairly represent their composition. But there are some, generally less substantial firms, whose dealings are not so straightforward. I have on my table a pamphlet which accompanied the "Ammoniated Dissolved Bone," No. 120. It gives a number of certificates of the good quality of the article, and an analysis which is stated to have been "adopted as the standard of this valuable compound." It compares with the actual analysis of our sample as follows:

	Represented in Advertisement.	*Found by Analyses.*
Soluble Phosphoric Acid	8.27	2.64
Reverted do. do.	——	2.30
Insoluble do. do.	3.83	0.44
Total do. do.	12.10	5.38
Nitrogen	2.15	2.09

Its actual value was, therefore, a little over half what it was represented to be.

The figures for bone manures are well worth studying. Pure bone generally contains from 20 to 25 per cent of phosphoric acid, and 3½ to 4 per cent of nitrogen. Several in the table fall considerably below this standard, Nos. 96, 97, 98, and 129 varying in content of phosphoric acid from 10.70 to 14.62 per cent. These latter samples contained considerable salt-cake (an impure sulphate of soda.)

Inferior Fertilizers.

No. 19 was a sample of a material which has formerly been used in considerable quantities in this region and elsewhere. It contained over 63 per cent, or 1,261 lbs. to the ton, of fragments of brick and coal, and other equally worthless materials. A ton would furnish about as much of the valuable ingredients as 300 lbs. of good Peruvian Guano. No. 8 is a fraudulent article, called the "American Bone Fertilizer," of which another sample was referred to in one of the previous articles. No. 22 was represented to be a first class superphosphate. Some farmers to whom it was offered at $48.00 per ton brought a sample to our Station for analysis before purchasing. It proved to be worth less than one-third the price.

Food for Study.—General Conclusions.

In presenting the above I have had in mind a number of farmers, some of them personal acquaintances, others, strangers whom I know only by their letters of inquiry, but all of whom have asked questions about the subjects treated upon here. I think a careful study of the facts and figures given will supply to the reader a means of judging of the value of a fertilizer from analyses. In laying out his plans for next season, he has first to decide whether he will buy guano, or fish, or bone, or superphosphates, and at what cost he ought to get enough to furnish the ingredients he wishes to supply to his soil. He can then find what articles are obtainable, and at what prices, compare the analyses of the fertilizers offered him with those above, and judge which is best and cheapest.

In brief there are two very important principles which should be observed by farmers in the selection of commercial fertilizers. They should 1st, Purchase only those of which the composition is definitely stated and guaranteed by the seller. 2nd, Of these, select the ones which furnish the materials needed by their soils and crops, in the best form and at the lowest cost per lb.

I know that here, as elsewhere, it is easier to preach than to practice. One great difficulty is in getting reliable analyses. In Connecticut farmers

Table 36.

ANALYSES AND COSTS OF VALUABLE INGREDIENTS OF COMMERCIAL FERTILIZERS.

NAME OF FERTILIZER.	Station Number.	Moisture.	Sand, etc.	Phosphoric Acid. Available. Soluble.	Phosphoric Acid. Available. Reverted.	Phosphoric Acid. Insoluble.	Phosphoric Acid. Total.	Potash.	Nitrogen.	Ammonia equivalent to Nitrogen.	Retail Price per Ton.	Cost of one pound, each of valuable ingredients, at prices stated. Nitrogen.	Phosph'ric Acid. Soluble.	Phosph'ric Acid. Reverted.	Phosph'ric Acid. Insoluble.	Potash.
PHOSPHATIC FERTILIZERS.		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	$ cts	cts.	cts.	cts.	cts.	cts.
WITHOUT NITROGEN.																
Superphosphate	5	17.39	6.12	10.27	....	3.50	13.77	....	....	....	33.00	....	14.1	....	5.6	....
Superphosphate	53	8.55	....	23.28	....	8.67	31.95	....	....	....	61.00	....	11.5	....	4.6	....
WITH NITROGEN.																
Bone Manures.																
Ground Bone	43	5.69	2.81	....	....	....	23.55	....	3.15	3.82	42.00	20.6	....	....	6.2	....
Ground Bone	58	11.88	....	....	....	....	19.79	....	4.03	4.89	38.00	19.	....	....	5.7	....
Ground Bone	94	7.00	....	....	....	....	23.61	....	3.88	4.71	33.00	15.0	....	....	4.5	....
Bone Flour	96	16.05	....	....	....	....	14.62	....	2.36	2.86	35.00	26.0	....	....	7.8	....
Bone Meal	97	18.45	....	....	....	....	14.25	....	2.37	2.87	30.00	22.6	....	....	6.8	....
Celebrated Ground Bone	98	17.09	....	....	....	....	10.70	....	3.43	4.16	31.00	23.3	....	....	7.0	....
Raw Ground Bone	106	8.78	5.56	....	....	....	15.26	....	3.90	4.73	47.50	28.0	....	....	8.4	....
Fine Bone	121	8.23	....	....	....	....	26.72	....	3.40	4 12	45.00	19.7	....	....	5.9	....
Ground Bone	129	14.71	3.74	....	....	....	12.98	....	2.84	3.44	38.00	28.1	....	....	8.5	....
Nitrogenous Phosphates and Superphosphates.																
Ammoniated Superphosphate	11	19.37	2.60	9.91	0.16	0.80	10.87	....	2.75	3.38	48.00	26.8	16.0	10.7	6.4	....
Superphosphate	15	21.75	3.60	9.94	....	4.10	14.04	....	1.67	1.96	42.50	23.8	14.8	....	5.9	....
Steamed Bone "Dissolved"	25	8.71	....	0.43	....	12.34	12.77	....	4.25	5.15	48.00	32.2	19.3	....	7.7	....
Soluble Nitrogenous Phosphate	101	19.27	....	7.24	....	0.46	7.71	....	4.41	5.36	40.00	22.7	13.6	....	5.4	....
Ammoniated Superphosphate	117	19.16	1.25	10.22	2.80	1.66	14.68	....	2.54	3.08	42.00	21.	12.5	8.4	5.1	....
Ammoniated Dissolved Bone	120	16.83	5.83	2.64	2.30	0.44	5.39	....	2.09	2.53	40.00	42.5	25.5	17.0	10.2	....
Abattoir Guano	127	17.61	....	8.91	1.69	1.23	11.83	3.99	3.39	4.11	50.00	22.7	13.6	9.1	5.5	7.3
Ammoniated Bone Phosphate of Lime	128	21.01	....	11.67	0.92	0.20	12.79	....	2.24	2.71	40.00	21.0	12.5	8.3	5.0	....
Superphosphate	133	19.70	2.62	5.84	1.19	1.04	8.07	....	2.39	2.90	40.00	30.0	18.0	12.0	7.2	....
Ammoniated Bone Superphosphate	139	19.31	2.27	1.70	8.60	3.22	13.53	....	2.39	3.62	50.00	30.4	18.2	12.1	7.3	....
NITROGENOUS FERTILIZERS.																
WITH CONSIDERABLE PHOSPHORIC ACID																
No. 1 Peruvian Guanos.																
Rectified	57	12.61	1.80	10.67	....	1.71	12.38	2.43	9.15	11.10	60.00	17.9	10.7	....	4.3	5.7
10 per cent Ammonia Standard	108	21.57	....	5.12	9.82	2.86	17.80	3.24	8.56	10.39	60.00	17.4	10.4	7.0	4.2	5.6
10 per cent Ammonia Standard	137	13.06	....	5.27	6.24	4.01	15.52	4.36	7.76	9.42	60.00	19.0	11.4	7.6	4.6	6.1
WITH LITTLE OR NO PHOSPHORIC ACID.																
Fish Manures.																
Fish Guano	28	21.96	....	....	....	....	8.66	....	6.07	7.37	40.00	24.5	....	....	5.8	....
Dry Ground Fish Guano	100	14.64	....	....	....	....	6.67	....	7.50	9.11	45.00	24.6	....	....	5.9	....
Fish Scrap	103	40.95	....	....	....	....	6.23	....	5.33	6.47	16.00	11.1	....	....	3.3	....
Fish Scrap	131	25.10	2.42	....	....	....	7.49	....	5.49	6.66	16.00	10.3	....	....	3.1	....
Animal Refuse.																
Animal Dust	29	14.45	....	0.26	....	5.80	6.06	....	7.32	8.89	50.00	28.2	16.9	....	6.7	....
Azotine	49	12.56	....	....	....	....	6.92	....	7.33	8.89	50.00	27.7	....	....	6.6	....
Dried Blood, Meat Scrap, and Bone	102	12.26	....	....	....	....	5.20	....	8.08	9.80	40.00	21.6	....	....	5.1	....
Dried Blood	119	....	....	....	....	....	....	....	10.87	13.19	....	....	....	....	....	....
Miscellaneous.																
Castor Pomace	35	6.83	....	....	....	....	2.11	....	4.80	5.83	25.00	23.5	....	....	5.7	....
Sulphate of Ammonia	3	....	....	....	....	....	....	....	20.53	24.92	97.50	23.7	....	....	....	....
Nitrate of Soda		....	....	....	....	....	....	....	15.65	19.00	80.00	25.6	....	....	....	....
INFERIOR FERTILIZERS.																
"Bone Fertilizer"	8	13.07	41.46	....	....	....	2.80	....	1.03	1.24	55.00	158.8	....	....	38.1	....
Poudrette	19	4.20	63.07	....	....	....	2.22	....	1.41	1.71	25.00	64.4	....	....	15.4	....
"Ammoniated Bone"	22	29.07	9.20	2.24	....	1.90	4.14	....	1.28	1.55	48.00	77.9	46.7	....	18.7	....
GERMAN POTASH SALTS.																
Leopoldshall Kainit	21	....	....	....	....	....	....	13.97	....	....	30.00	....	....	....	....	10.8
Chloride of Potassium	33	....	....	....	....	....	....	50.56	....	....	60.00	....	....	....	....	5 9
Sulphate of Potash		....	....	....	....	....	....	44.00	....	....	70.00	....	....	....	....	8.0

NOTE.—The names of the articles above are those by which they were sold. The numbers opposite each are those given to the samples when received for analysis, and by which they are known at the Station. The prices of the numbered samples are those actually paid by purchasers at the places were they were bought, either in Connecticut or outside markets. Blanks indicate that the ingredients were either lacking or not sufficient in amount or value to be worthy of account.

For explanations of the analyses, ways the costs of the ingredients are calculated, etc., see article No. XVI, (April No.)

can have the fertilizers they buy analyzed at the Station at small cost or for nothing. In several other States inspectors are appointed to analyze fertilizers offered for sale, though they do not, as in Connecticut, make the additional provision for analyses of samples for purchasers. But the world moves, and we shall soon have "fertilizer control systems" more generally introduced. In lack of these it is an excellent plan for buyers to club together, and purchase quantities sufficient to warrant an analysis at their own expense.

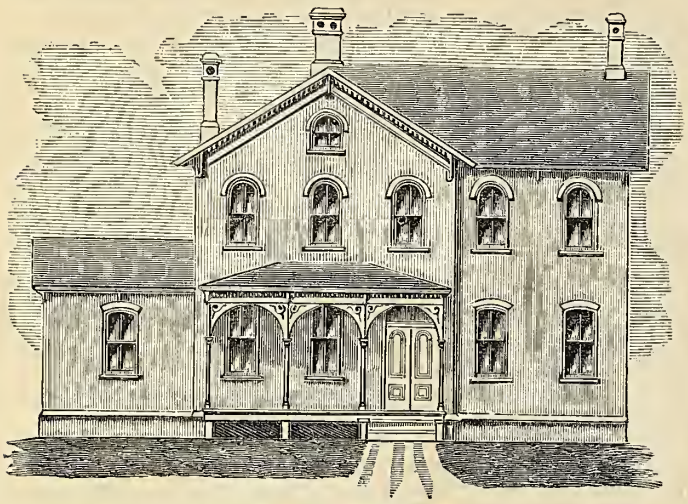


Fig. 1.—ELEVATION OF HOUSE.

A Frame and Brick Farm-House, Costing $3,600.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These designs represent a Farm-house having an air of substantial comfort and refinement, and affording ample space and convenience for a large family....**Exterior,** (Fig. 1).—This style admits of the simplest and most economical finish, is susceptible of almost any degree of irregularity, and is therefore suitable for the greater number of rural buildings. The indestructible covering of the side walls and roofs has the merit and appearance of permanency....**Cellar,** (Fig. 2).—The central division is 7 feet high, has five windows, an outside door, and a stairway leading up to the kitchen. The girders under the first floor beams are supported on large posts, standing on firmly imbedded flat stones....**First Story,** (Fig. 3).—Hight of the ceilings, 11 feet in main house, and 9 feet in the one-story wings at the side and rear. The Parlor, Sitting-rooms, Kitchen, and Front Hall are in the main house. The rear wing contains a Summer-kitchen, Bath-room, and a large Kitchen-pantry. The side wing is divided into a Bed-room, Clothes-press, and Pantry. The Parlor, Sitting-room and Bed-room face the front. The

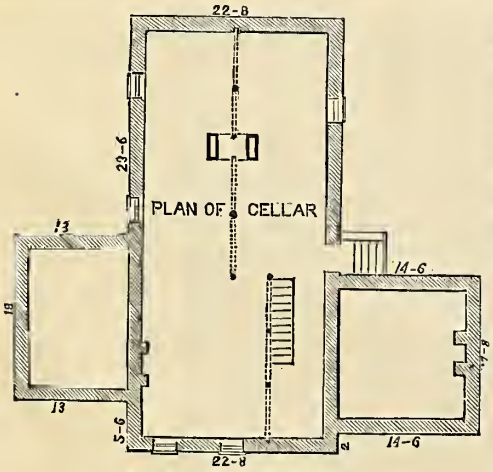


Fig. 2.—PLAN OF CELLAR.

Kitchen is the largest apartment, and is arranged to be used as the Living-room. It has windows in each end, an outside door leading to a pleasant veranda, is in direct communication with the front hall, sitting-room, summer-kitchen, two pantries, and the cellar stairs. The Summer-kitchen, intended to relieve the larger room of the heavier work, is furnished with a Range, Boiler, Sink, Pump, and Wash-tubs, and has an outside door. The Bath-room is situated at the side of the summer-kitchen, and contains a Bath-tub and a Seat-closet. A Tank, 3x3x6 feet, is placed between the ceiling and roof of this wing, and arranged to receive rain-water from the main roof. A Force-pump is set near the iron sink, and arranged to supply water from the cistern to the tank, when the rain-supply is exhausted. It will be observed that all the plumbing apparatus is placed in close proximity, thus insuring economy in the cost of their introduction, and also that their location prevents any serious injury that might arise from chance-bursting of pipes, or through carelessness. No windows are shown at the rear of the summer kitchen, or bath-room, this space being reserved for any additions that may be desired for fuel, etc....**Second Story,** (Fig. 4).—Hight of ceilings, 9 feet. There are five Chambers, a Hall, and two Closets in this story. Each chamber is of good dimensions, well lighted, (12 windows in this story,) and may be warmed if required either by stoves placed in them or through pipes inserted in the flues for the introduction of

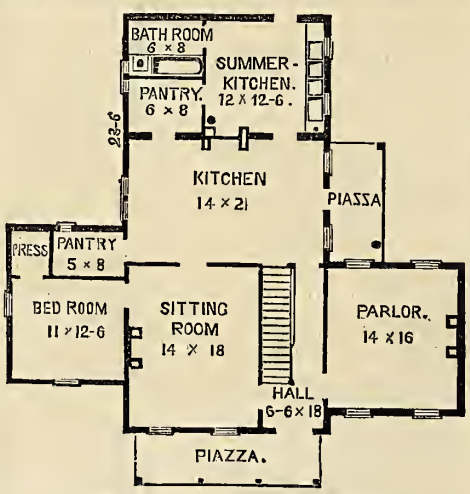


Fig. 3.—PLAN OF FIRST FLOOR.

hot air from heaters in the first story, as described in the July *American Agriculturist*, 1875....**Attic.**—A flight of stairs, located above those of the first story, and inclosed with narrow ceiling, with a door at the foot, leads to the Garret or Attic. This story is throughly timbered and floored, but otherwise unfinished....**Construction.**—The Foundation Walls are of broken stone, laid in good mortar, 18 inches thick, and show 2 feet above the final grade of the surrounding earth. The materials of the frame are indicated in the estimate below, and are framed together and raised in the usual manner, except that the sills are placed 4 inches back from the face of the foundation, to provide a footing for the water-table and brick inclosing. The *inside* of the exterior frame is roughly ceiled around with hemlock boards, which are thoroughly nailed to the studding, bringing them "into line," and making them firm. The method of inclosing the sides of the building is shown in fig. 5. *A* is the Foundation; *B* the Water-table; *C* the Brick Wall; *D*, Inside Boarding; *E, E, E*, Timber of the frame. The water-table of dressed stone is laid on the foundation in cement mortar. The Brick are laid in "stretchers," in good lime and sand mortar, with close joints. Anchor nails (fig. 6) are driven in each stud in contact with the upper surfaces of every fifth course of brick, as shown in the sketch. The Window Sills are of smoothly dressed stone, set in the regular manner. The window and door frames are made as for 8-inch brick-work. The heads are arched over with brick projecting ¼ an inch beyond the face of the walls, forming a coping to the windows. The anchor nails are made of ordinary galvanized ⅛-inch fence-wire; 6 inches long is required for each nail, 1 inch of both ends being bent at a right angle, and one end is flattened to be easily driven into the studding, and the opposite end is embedded in the joints of the brick-work. These nails are best applied by a carpenter employed to accompany the masons in their work.

Fig. 6.—ANCHOR NAIL.

Fig. 4.—PLAN OF SECOND FLOOR.

This mode of building extension walls may be new to many persons, but it has been demonstrated and proved to be thoroughly practical, and for many reasons preferable to the usual "solid brick"-wall; it is less expensive, does not retain moisture, requires no "furring off," or "filling in," and attachments of cornices, stoops, or balconies are easily made to connect with the inside framework.... The main and wing roofs are covered with dark 8x 16-inch slate, laid 7 inches to the weather. Mason's lath are put on the inside-boarding in a vertical manner, 16 inches apart, and the interior of the two full stories is lathed, plastered, and otherwise fully completed.

Estimate of Cost:

157 yards Excavation, 4 feet deep, @ 25c. per yard	$39.25
60 perches Stone Foundation, @ $2.75 per yard	165.00
44 feet Stone Steps and Cellar Window Sills, @ 30c. ⅌ ft.	13.20
278 feet dressed Stone Sills and Water-table, @ 75c. ⅌ ft.	208.50
31,000 Brick, furnished and laid, @ $15 per 1,000	465.00
925 yards Plastering, @ 35c. per yard	323.27
Stucco Cornices	30.00
6,707 feet Timber, @ 2c. per ft.	134.14
viz. Sills, 4x8 in. x252 ft. long.	70 Beams, 3x8 in. x22 ft. long.
Plates, 4x6 in. x252 ft. lg.	21 Beams, 3x8 in. x15 ft. long.
Ties, 4x6 in. x324 ft. long.	8 Beams, 3x8 in. x13 ft. long.
Girders, 4x8 in. x46 ft. l'g.	1 Piazza, 3x7 in. x122 ft. long.
10 Posts, 4x7 in. x23 ft. l'g.	1 Piazza, 3x5 in. x70 ft. long.
100 Joist, 3x4 in. x13 ft. long, @ 16c. each	16.00
400 Wall Strips, @ 13c. each	52.00
600 Hemlock Boards, (for sheathing and roofing,) @ 16c. each	96.00
Cornice materials, $70; 21 squares Slate, @ $9, $189	259.00
436 feet Tinning, Gutters, and Leaders, @ 8c. ⅌ foot	34.88
500 Flooring (9-inch spruce) @ 26c. each	130.00
Stairs, complete, $90; Piazzas, $130	220.00
5 Cellar Windows, complete, @ $6 each	30.00
33 Windows, above cellar, complete, @ $10	330.00
25 Doors, @ $10, $250; Range and Plumbing, $250	500.00

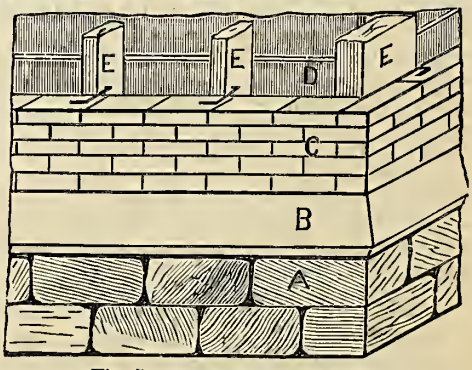


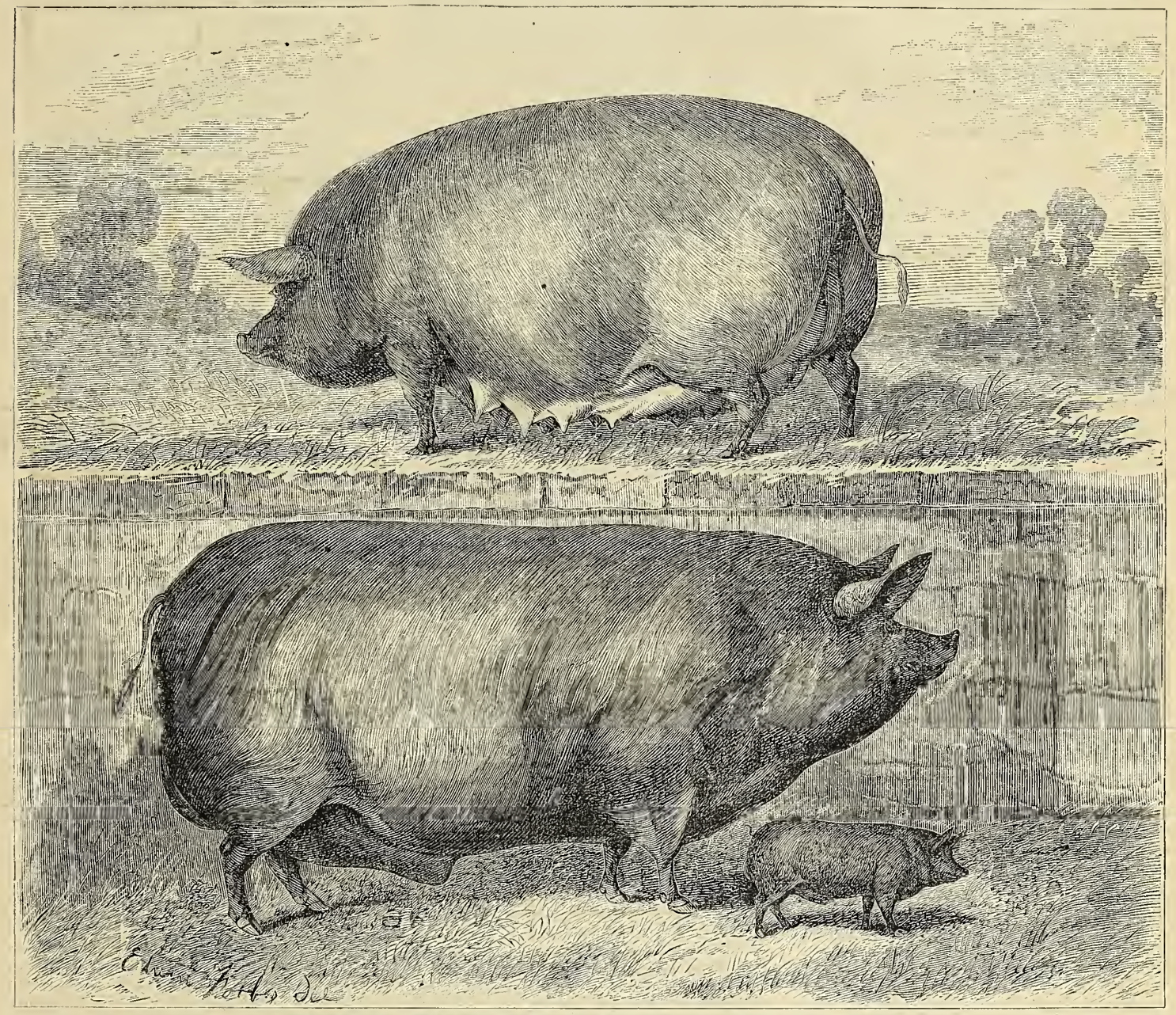
Fig. 5.—MANNER OF BUILDING.

3 Mantles, $75; Closet finish, $25	100.00
Painting, $200; Cartage, $30	230.00
Carpenter's labor not included above	200.00
Incidentals	23.76
Total Cost, complete	$3,600.00

The Essex Breed of Swine.

Chief amongst what are known as the small black breeds of swine is the Essex. The pigs, which are entirely black, may be made, by generous feeding and skillful care, to reach such weights as would entitle them to rank amongst the large breeds, but their principal value is found in their use as smaller pigs for the market. A rapidly growing animal that will so mature in one season that it may be brought to market as a "pig," and not as a "hog," is a very desirable one, and it is precisely for this use that the Essex deservedly stands first amongst the black swine. Another valuable use for the Essex, and one which they are made to serve very extensively, is for crossing upon the coarser classes of swine; thus employed they produce grades with finer form and more valuable meat, with less offal than is common on "native" pigs. In this respect they are rivals of the Berkshire. The engravings represent a sow, boar, and pig of this breed, drawn from life, and are actual portraits of choice animals. As this breed is now widely disseminated in the United States, and there are several careful and successful breeders, each of whom is equally entitled to well merited consideration from the public, and lest invidious comparisons might be made against the interests of any one of these breeders, we refrain from giving the owner's name. It will be sufficient to say that there are several prize-winners at the various fairs, who possess animals quite equal in merit in all respects to those portrayed here.

The old English Essex pig was originally a coarse, parti-colored animal, black, with white legs, nose, and shoulders. Upon this stock the Neapolitan boar, from Italy, was crossed, with the effect of producing a black animal, of rather slender form, of very fine bone, but of a weak constitution; the last being the result of too close inter-breeding. Nevertheless the improved breed became very popular, and by further efforts, in which the strengthening of the constitution, by the infusion of new blood, was made a special point, the improvement was rendered more valuable and satisfactory. This was done so far by Lord Western. Then Mr. Fisher Hobbs, a tenant of Lord Western, undertook a course of improvement with these Essex-Neapolitan pigs. He soon produced a breed which he called the "improved Essex," and which, in figure and points of value, were very near like those of the present day. These had all the symmetry of the Neapolitan pig, with its fine bone, small head and jowl, and besides the full shoulder, large ham, deep sides, and light offal, which still distinguish it. This brings the history of the Essex, as we now know it, up to the year 1860. Importations of the stock of Mr. Fisher Hobbs were made by Samuel Thorne, Esq., of the State of New York, and in a few years the stock became well distributed in this country. Wherever they have been introduced, they have at once become a favored breed, and have been found exceedingly hardy, especially in the Southern States, where they resist the summer's heat as well as they do the northern winter's cold. They probably exceed the Berkshires as feeders, although this will scarcely be admitted by the friends of that breed; if, however, there is any advantage in this respect, it must go to the credit of the Essex. They keep easily in excellent condition, as may be seen from our illustration, which represents the animals simply in ordinary working order. We have given frequent statements in the *American Agriculturist* of the weights, to which Essex pigs have been fed within a year, the highest figure, given by a correspondent about a year ago, is probably the largest which has come to our knowledge—viz., over 600 pounds, with a loss in dressing of less than 8 per cent. The Essex is an excellent family pig, and a half-bred animal would doubtless be found one of the most economical for this purpose that could be procured. It may be well to repeat the caution against using half-breeds for stock purposes. As feeders they may not be surpassed, but if fed for breeding, the advantage is lost, and deterioration will infallibly follow. A thoroughbred boar, selected with care, or procured from a trustworthy breeder, should invariably be used for breeding. It is one of the unavoidable consequences of the improvement of a breed by crossing or careful selection, that care in this respect can not be relaxed without mischief; it is therefore a necessary division of labor in this busi-



ESSEX PIGS.—*Drawn from Life, and Engraved for the American Agriculturist.*

ness, that a few men should devote themselves to breeding pure stock for the use of the public, who will find that they can not profitably compete in this respect with those who have made a study and a profession of it. The mention of a black breed of pigs is quite sure to call out numerous inquiries if the color is not objectionable in the pork, and we anticipate these in this case by stating, as we have done many times already, that these, and other black pigs, have their "beauty" less than "skin-deep," and that when they are dressed their skin is as white and handsome as any others.

Among the Farmers.—No. 11.

BY ONE OF THEM.

Westchester County.

The City of New York, with its Brierian arms, grasped after, grabbed, and hugged to its embrace a charming bit of territory, so soon as the legislature allowed it to claim as its own—the south-western portion of Westchester County. Bridges and roads, water and gas pipes, police, and street lights, disturb the rural simplicity and harmony of many a country scene. In the midst of it all—of all this town-in-country—there are many beautiful farms, stately old mansions embowered in trees, and looking out upon sunny lawns; cozy cottages, with an acre of lawn and shrubbery, and one or two acres of garden, with now and then an old time gambrel-roofed burger's house, having picturesque gray shingled sides, and a few tall elms and button-balls casting their shadows across the fenced-in door-yards. The march of rectangular, graded streets, will sweep all this away in a few years, except as a few citizens cling to the dwellings their fathers built, and by personal influence, or otherwise, or simply by refusal to sell, retain the old estates shorn of all beauty by the criss-cross city streets. Now, however, in numerous places we encounter here, with the most charming rural surroundings, the abodes of wealth and comfort, choice herds of Jerseys, beautiful horses, luxurious "turnouts" and all with which money and taste can surround their possessors.

Among such environments I found the pleasant home of Mr. William Simpson. His son, Mr. Wm. Simpson, Jr., has for some years been favorably known as a fancier of pigeons and poultry, and a breeder of Jersey cattle and Berkshires, and I found the examination of his well arranged buildings and their occupants especially interesting.

A Family of Jerseys

demanded attention first of all—and truly they are of one family. "St. Helier" is a bull of considerable fame as the getter of good milch stock, owned by his importer, Dr. O. S. Hubbell. Mr. Simpson's best cow, 5 years old, is by him, her daughter, by "St. Helier," 3 years old, and in milk, with full sister of the 5-year-old, a promising yearling, stood together, and near by a young bull, also by "St. Helier," and out of the older cow. It will be noticed that the three-year-old and the young bull show pretty close in-breeding. I saw no sign of weakness; on the contrary, every evidence of thrift and improvement. I believe that real steps forward in breeding, in the establishment of permanent types, and in fixing pronounced excellencies, are more readily accomplished by close breeding, *judiciously* done, than in any other way. The heifer bids fair to be as good a cow as her dam, and probably better, doubtless deriving her good traits from "St. Helier's" dam more than from any other ancestor. It is a question which can only be definitely answered by experiment, how far

In-and-In Breeding

can be carried with success. In this case the chances for securing a real benefit seemed so promising, that on talking it over, and studying the bulls in neighboring herds, I did not hesitate to counsel Mr. S. to try the experiment of another and closer cross, by keeping his young bull for a year at least at the head of his herd. His progeny by the 5-year-old cow, (his dam), will be five-eighths of the blood of "St. Helier," rendered intense by the nature of the excellent cow through which it is strained. We cannot all afford to try such an experiment, for if our judgment be at fault, and it certainly is liable to be, weakness of constitution, deformities, and tendencies to disease are engendered or confirmed, and the loss which results may be as great as the good we hope for. There are several good young things by other sires, and some cows and their progeny in no wise related to "St. Helier," which make up the herd of a dozen animals, all of "solid," fashionable colors, "black points," etc., and showing well for milk and butter, though accurate tests were lacking. Among them stalked the *outré* figure of

A Fine Zebu Cow

of large size. She was imported by a Boston merchant in the Indian trade, and has proved an excellent milch beast. She is of a solid, light, silvery fawn color, nearly white, with black points throughout. Her general form is that with which we are familiar, as that of the "sacred" cow or bull of India, in menageries and in pictures. Her hump is of moderate size, but well defined; her ears immense and pendulous; her horns straight, awkwardly set according to our taste, nearly cylindrical, and black. She gives about 12 quarts of rich excellent milk, has a well-formed udder, and large teats, and is the gentlest creature I ever saw. She had a young full-blood calf, looking a good deal like a lop-eared rabbit, and not much bigger. It was a new idea to me that, as compared with good cows, a Zebu could give milk enough to make it worth while to keep her, but here was a demonstration. Mr. Peters, of Georgia, years ago demonstrated that the Zebus and their crosses and grades, made excellent beef, and were entirely free from the attack of the Texas fever and murrains, which prevail among common cattle in many parts of the Southern States, but that they would be really valuable for milk, I do not remember to have seen claimed. I saw Mr. Peters' herd a few years ago—some of them equalled Short-horns in stature.

Poultry for Use and Fancy.

Like most people who conceive a desire to keep fancy fowls, Mr. S. launched out into the breeding of numerous varieties. He had the rarest and the finest, the largest and the smallest. His strains were famous for their unique excellencies, and breeders still advertise their stocks as derived from his strains. Yet, learning wisdom by experience—a happy faculty—he has now reduced his stock of fowls to Plymouth Rocks and White Leghorns. The former for the table, the latter for eggs. The Plymouth Rock fowls stalked about nearly as big as turkeys, though hatched in April, and the vivacious, vigorous snow white Leghorns flirted their scarlet combs at us with a promise of an egg a day, which rarely fails, except in moulting-time.

The true fancier and judicious breeder has full scope for his genius in the breeding of two or three varieties, in maintaining their excellencies, in correcting faults of form and style, in breeding for increased size and number of eggs, or for better form, more meat, and greater weight, a higher quality of flesh, etc., according to the breed he has in hand.

Pigeons

are bred now solely for beauty, and the varieties preferred are a very beautiful group of the Tumbler class, namely, Nuns, Bald-heads, and Priests—difficult to breed in perfection, but exceedingly pleasing in flight and at rest, and when critically examined. Following his fancy for curious things, Mr. Simpson retains a flock of

Sebastopol Geese,

which are distinguished by their snowy plumage, and by the length of the feathers, the quills of which are so weak that the plumes turn and twist. This gives the birds somewhat the appearance of the Frizzled fowls, whose feathers curl towards the front, but on examination one finds that with the geese the lower parts of the feathers are as usual, while the long shafts only twist towards the ends. They look flounced and furbelowed and fimbriated to the last extent, not beautiful, but very curious. They seem to breed well, and are doubtless as good for the table or for feathers, as any other geese, but not so large as the Toulouse and Bremen. I have a high consideration for

Common Geese,

they rank very near to pigs in some respects. We raise a flock every year. They have a pasture devoted to their use; they need no care from early spring to autumn, except to see that the eggs do not freeze in March, and that when the geese sit they have them placed in the nest again. They take care of themselves, give us a crop of feathers once in seven or eight weeks, and when ready for market fatten in ten days, always bring a good price, and are always excellent when well roasted. Their fat is the nearest approach to lard of any product of the farm, in fact is about midway between lard and butter. The Jews know this, and fat live geese always sell well to devout Israelites. I would be glad to know exactly what it would cost to raise by the 100 lbs., live goose meat, (and feathers), and am by no means sure it cannot be produced cheaper than pork.

Guinea Pigs.

For absolute uselessness commend me to Guinea pigs. They are pretty, harmless, delicate little things, great eaters, fast growers, great breeders, easily cared for, not liable to disease. I mention them as among Mr. Simpson's fancy stock, simply because we, most of us, want our boys, and girls too, to grow up with a fondness for animals, and accustomed to take little responsibilities, having a daily care for some living things—and Guinea pigs certainly offer one of the best means for this sort of instruction. Rabbits, poultry, and ponies may follow in due time, and then regular farm chores.

Seeding to Grass.

Passing the Faile estate in Westchester Co. not long ago, I was struck with the great amount of manure hauled out and being spread upon an old sward, which had been, to all appearance, pastured this year, but no doubt mowed until quite recently. On inquiry, I learned that they were preparing to seed down to timothy, red-top, and clover, with no intermediate or introductory crop. I have done it occasionally, but not with such a profusion of manure. We think we never have the manure to spare—and yet it is a false principle to be sparing in this particular. There is no truer saying than that "the liberal hand shall be made rich." Land can hardly be too rich for grass, provided we stand ready to cut when it is ready, and not allow it to lodge and decay, or heat upon the ground. The lot alluded to is now (October) as green as a wheat field, and a firm sod is fast forming. It will cut three tons of hay to the acre the first season, or I am much mistaken.

Seeding with Rye.

We were uncomfortably set back in our work this year on account of one of the farm horses becoming temporarily disabled just when we calculated to do our plowing for rye. September wore away; October came, and the snow storm of the 15th found the rye still unsowed. What to do was a question. Winter was upon us. We had tried one horse after another, but the one was too nervous and the next too slow—one was unused to plowing, the plow-beams broke, the whiffletrees broke, and things went wrong. Finally the gray mare was able to work again, but her shoulders were tender, and she was "soft" from unuse. We pushed the plowing ahead, and counseled with our neighbors. Not one said "you are too late—let the land lie until spring." All agreed that the chances were in favor of a good crop, with perhaps shorter straw than usual. That a fair sprinkling of manure would make up for weeks of time. So we went ahead. The result will show. If we did wisely a few weeks of warm weather will bring up the seed, and the ground is light and not likely to heave by the frost to the destruction of the plants. Could we calculate on snow covering the ground all winter, it would be all right, but bare ground, dry, cold weather, and high winds, will do the field great damage. We seeded with

Timothy and Orchard Grass,

and shall sow clover in the spring. These two grasses do not do well together. Not that they do

not grow well in each others company, I think they *do*, remarkably; but orchard grass is fit to cut fully three weeks earlier than timothy. We sow them together because red-top does not grow well upon that particular spot—it is too open and dry—and we look to the field remaining for some years as a pasture after mowing it for two years. June-grass and white clover will assert themselves as the red clover and timothy disappear, while the orchard-grass will be for a good while the stand-by.

Plow-beams.

Why is it that our agricultural establishments can not or will not furnish good plow-beams? My neighbor Baker was in "a state-of-mind" the other day—he was breaking up a tough piece of rooty, rocky land with a German plowman, and a pair of spirited horses. Now no boughten plow-beam can stand that sort of thing—of course it went to bits—"pulled right in two." *We* have learned to keep in one corner of the barn or lumber-room, a number of good, straight, white-oak staddles, cut in December, and we rather rejoice when the fancy, soft, ash plow-beam cracks and goes apart, for we are forced to put on one that we can trust. It comes awkward at the time, we lose half a day's work of the team perhaps—but that don't trouble the manufacturer. Well—friend B. sent his plow to the country blacksmith and wheelwright, got a new ash beam, and a good one—had the job well done, and deducted the cost from the bill, which he had not paid. This was business. If we could all do so, how it would change the quality of manufactures generally, and of plows in particular!

One advantage of home-made plow-beams ought not to be overlooked—when they break we don't grumble. I have sometimes put on a manufactured beam intended for a much heavier plow, cutting it off to fit—for it is really a nuisance to be obliged to hew out a beam when a so much nicer looking one, than one is able to make, can be bought for a few shillings at an agricultural store.

The use of Grades.—Pigs.

What I said about the use of grades in my letter in the October number, bore unexpected fruit. A gentleman, who is a large farmer, and a breeder of thoroughbred stock, called to learn where he could get a good lot of grade pigs to use for stocking a southern plantation. He wished to obtain a few extra good grades and then to breed them together. It seems he never thought that as soon as *grades* are bred *together* they cease to be grades. In regard to the pigs, when a sow of large common stock, which is also a good milker is crossed with a male of any of the improved breeds, especially if he be of medium or small size, the progeny will almost surely be fine in quality, of large size, quick growth and early fattening properties; combining thus the excellencies of both parent stocks. Such grades are ½-bloods, and if they be bred to a sire of the same breed, the progeny will be ¾-bloods—the next generation ⅞-bloods, and so on in *gradation;* each generation being nearer in form and style to the well-bred breed of the sires. But when half-bloods, of pigs, (or other animals) or any other grade, are bred together, it is wonderful how soon they deteriorate and go back to something less good than grades, though superior probably to the low-bred originals.

Cross-breds

follow, so far as I can see, a very similar law. They are exceedingly good at first; but it requires the most careful and systematic breeding to maintain their excellent points after they are bred by themselves, and without frequent recurrence to the blood of one of the original breeds. I should not be surprised to learn, (to speak at a venture), that

"The Magic Breed," so-called,

was a case in point. When first brought out it was a comparatively fresh cross of a strong coarse pig with the Berkshire. Like grade stock, or like a good cross-breed, the pigs were excellent; fine in bone, small in offal, great growers, and quick feeders. I have several times gone a good deal out of my way to see these pigs, and can see in them nothing but grades, or cross-bred pigs, gradually deteriorating, and which need a fresh cross of Berkshire now and then to keep them up and make them uniformly good. I would really like to hear from some "Poland-China," (I believe that is the approved name,) breeder, especially if he has ever bred Berkshires, if I am not right in my surmises.

The Pig for the South.

Black or slate-colored pigs are freest from skin diseases in hot climates. The choice is practically between the Essex and Berkshires for males with which to improve the native stock of hardy grubbers of the root-or-die variety. Those who have tried the former have been delighted at first, but after a few years begin to recall with longing the lean hams and thin but solid and flavorous bacon of the old race-horse breed. The trouble with the Essex pigs for the South is that they are not active enough. They are of the eat-and-sleep, and sleep-and-wake-to-eat kind, and their grades are of course like them. The side fat is superb, and so is the leaf-lard, and so far the breed is all that could be desired; but the hams and shoulders are too fat for profit, and the ham is not marbled with fat like the Berkshires. These (the Berks) are much more enterprising, more wide awake, less easily controlled, but good foragers. Their grades are a wonderful improvement upon the original stock, may be made very fat, and yet the proportion between fat and lean in the hams, shoulders, and side-pork or bacon is such as to develop and preserve the excellencies of the meat. The hams are large and rich, and juicey with diffused fat. Berkshires are not quite so easily fattened when penned and systematically fed as the Essex and Essex grades, but they will take much better care of themselves in the woods, and when penned for fattening may be finished off with half the feed the original "land-pikes" would require.

With many Northern and Western breeders the Essex is a more profitable pig than the Berkshire, because his nature leads him to take little exercise, so that all he eats goes to flesh and fat. Respiration, which, if rapid, reduces fat greatly, is with him never accelerated by moving about, and, with plenty of feed, the sole burden of life being to digest it. This breed is pre-eminent among the black breeds, and excelled by none as fat producers.

Animal Portraiture.

Some remarks of ours in September last, regarding the prevailing style of animal portraiture, have met with some criticism on the part of one or two of those journals which make most frequent use of the peculiar sort of illustration to which we have objected. These critics insist that photographs of animals do not properly represent them, and that the artist's drawings are not intended as portraits, but as representations of typical animals only. In regard to the first objection, we can refer to the portrait of the Russian stallion "Pravnouk," which appeared on our first page in September last, as a clear refutation of that statement. The engraving was made from a photograph on the wood of a photograph on paper, which was taken from life in Russia. Certainly no unprejudiced person can object to this engraving as a portrait of the animal which it unquestionably is, or as a work of art. To depend upon the eye and the hand for the exact delineation of a living animal, requires a more competent artist than usually engages in such work; while to draw a "typical" animal is merely the work of a draughtsman, and it is by this sort of work that the pictures we object to are produced. The demand for these "typical" illustrations has given employment to a class of draughtsmen that produce two or more different animals from the same "type" or model, or set of lines. We have before us at this moment, so-called "portraits" of an Essex sow and an imported Suffolk sow, which were recently published in a journal devoted to stock, in which precisely the same lines are used, and when one picture is placed over the other and held up to the light, there is seen *precisely the same outline* in both; even the curl of tail, prick of ears, and form and position of feet are identical in these animals of two distant breeds. In the same journal are so-called "portraits" of two horses, which have the same peculiarities, while in reality one horse is taller than the other, has a clearly different figure and a habit of carrying his ears backward and not pricked forwards. Again there is to be seen a so-called portrait in the Centennial Exhibition at Philadelphia of the cow which sold for (or was said to have been sold for) $40,600, along with another cow of the same lot, at the New York Mills sale. As a picture the production is certainly not without merit, and is very pleasing, but a person who was well acquainted with the cow, could not possibly recognize this picture as her portrait, until he saw it so stated in bold letters in the inscription beneath.

Our remarks are called "malicious." We are quite at loss to see how anything like "malice" can enter into the criticism of a picture. But moreover they are actuated by the "densest ignorance." Calling names is only resorted to by those who are lacking in argument; and if our well-meant and, we believe, perfectly truthful strictures, cause a resort to weapons of this style, the inference will be that some one is badly hurt. One critic thinks we are opposed to the Short-horns as a breed. A sufficient reply to this is found in the many fine pictures we have given, and the high praise that is already a matter of record in our pages. We wish that there could be a good Short-horn bull in every neighborhood, which there never will be so long as the present system of speculation—as pernicious in its way as any stock-gambling in Wall street—gives these animals fictitious values, far above what they are worth for breeding or any other purpose, except speculation. No, we are so much in favor of Short-horns, that we wish to see them free from everything that looks like misrepresentation, either in portraiture or in print, knowing that their own merits do not require any such doubtful aids. That these noble animals are ridiculously misrepresented by the "typical portraits" of them, is well known to those who know both the animals and their so-called pictures. As to misrepresentations of statement, we need only to call attention to the fact that upon the picture (above referred to) exhibited at Philadelphia is a conspicuous label, which states that the cow there represented "was sold for $40,600." Any person at all familiar with Short-horn matters, knows that this statement is *untrue;* that this price was only bid for the cow by an unauthorized person for an English gentleman who utterly repudiated the transaction. He will remember also the curious revelations made by Mr. Carr in reference to the sale, at which this fictitious price was bid for this cow. Now will any unprejudiced person explain why this statement is attached to this picture if it is not for the purpose of making the thousands of farmers who, from all parts of the country, passed in our grand procession through the Agricultural Building, think that this cow *did* really *sell for* the price named! Reading farmers know that no such sale was made, and seeing this label, they will wonder if the Short-horn business is *all* conducted on the same principle. We hold the breeding of Short-horns to be one of the most important branches of our agriculture, and hope before long to see the day when a farmer of moderate means may dare think it possible that he may improve his stock by the infusion of this noble blood. To hasten this day, and in the interest of the Short-horn breed, and, especially, in the interest of the American farmer, we shall endeavor to free this important branch of agriculture from everything that savors of humbug and appears like fraud, in picture or in print, and no accusations of "ignorance," dense, or "densest," will deter us from speaking what we conceive to be truth in the matter.

Exportation of Donkeys from England.—A second exportation of donkeys was recently made from a port of England to Brieux, France. There were 45 animals in this shipment, and the prices paid for them were from $5 to $7.50 per head. Considering the value of these useful beasts of burden, the many purposes to which they might be put here, and the very low price at which they may be purchased, it seems probable that their importation to this country would be profitable.

Mills for Farm Use.

Of late years many improvements have been made in mills for farm use, and a large variety of them have been constructed for different purposes, such as grinding flour and meal, feed for stock, bones for fertilizing, and other similar uses. More recently, however, as manufacturers have learned precisely what their customers require, and the purchasers have learned to appreciate the conveniences offered by the various mills, the increasing business has led the manufacturers to make still further improvements, and to offer very complete machines at very reasonable prices. To meet the numerous enquiries which are continually made about mills for various purposes, we here describe and illustrate some of the most valuable of them. In figure 1 we have a complete grain cleaning, grinding, and bolting mill, in one machine, with which the whole process may be brought within a very small compass, and completed upon a barn floor, if needed, with no more power than can be furnished by the farm teams or steam engine, or which may be set up in a country mill with the greatest economy of space, power and yield. For instance, the machine illustrated in fig. 1 has a pair of burr-stones of 20 inches diameter, weighs 1,200 lbs., takes up a space of only 4x9 feet, or 36 square feet, requires 3 to 6 horse-power, makes 500 to 700 revolutions per minute, grinds 3 to 7 bushels per hour, according to the power employed, and costs at the factory $450. Uncleaned grain, direct from the thrashing machine, may be used with this mill, and the work is so simple that any person of ordinary common sense may, after a little practice, set up and work the mill with success. The grain having been put into the hopper, which holds 2 bushels, or an ordinary bagful, passes into the cleaner *I*, and is scoured and freed from all dust. From the cleaner it goes to the stones and is ground. As the meal leaves the stones it is thrown, by a strong blast of cold air, from the double door *A*, through a wire screen against the bolt cloth, *O*, (covered by the door *G*), by which it is separated into fine flour, (at *F*,) middlings, (at *M*), and bran, (at *B*). At *J* is an adjustable feeder, which regulates the supply of grain to the stones. The bolt is made of the usual silk bolting cloth, of different degrees of fineness, so as to separate the flour into different grades. The cold air blast carries off all the vapor and dampness which arises during the grinding, and prevents clogging or pasting of the bolting cloth. The ordinary elevators or spouts used in a grist-mill may be applied to this machine, or the simple flour chest as shown may be used. This mill, which is known as "Harrison's Standard Mill," is made by Edward Harrison, of New Haven, Conn.

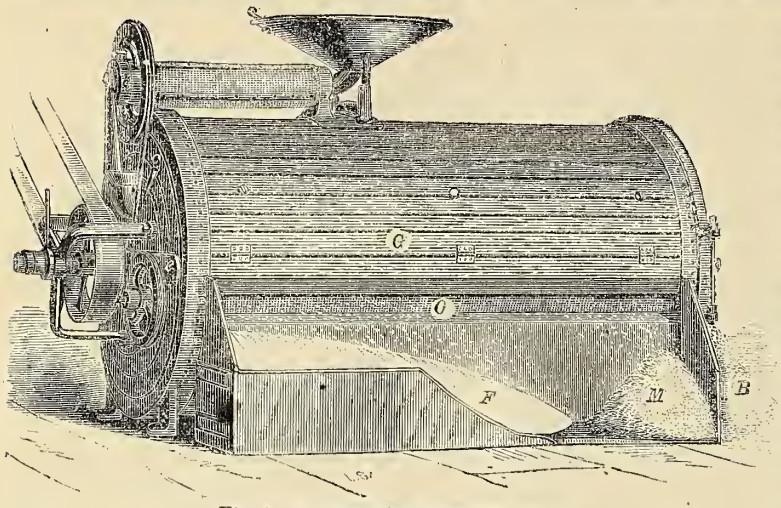
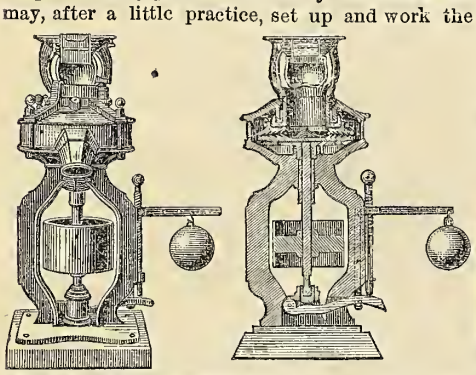


Fig. 1.—HARRISON'S STANDARD MILL.

A mill that can be used for grinding every thing that is ever ground at all, corn, corn ears, bones, horns, hoofs, plaster, shells, paint, ores of different kinds, fertilizers, sumach, and any material, whether hard or soft, is shown at figure 2. This is known as the "Bogardus Eccentric Mill" and is made by John W. Thomson, corner White and Elm streets, New York City. The complete mill is shown at figure 2; a section of the mill at figure 3, and the grinding plates at figure 4. The peculiarity of the mill consists in the plates. These are made with a number of cutting edges, and as they revolve on centers differently placed, the cutting edges cross each other and form the most powerful and effective grinding machine that we know of. For grinding bones for use as fertilizers, corn, corn ears, or whole corn fodder with ears in the husk for fodder, for grinding plaster, and other similar uses, this mill is of very great value to farmers, or country millers, who by running one of these mills could serve their customers in grinding plaster, bones, horns, hoofs, shells, oil-cakes, and other such articles, a service which is frequently required of them.


Figs. 2 and 3.—BOGARDUS ECCENTRIC MILL AND SECTION.

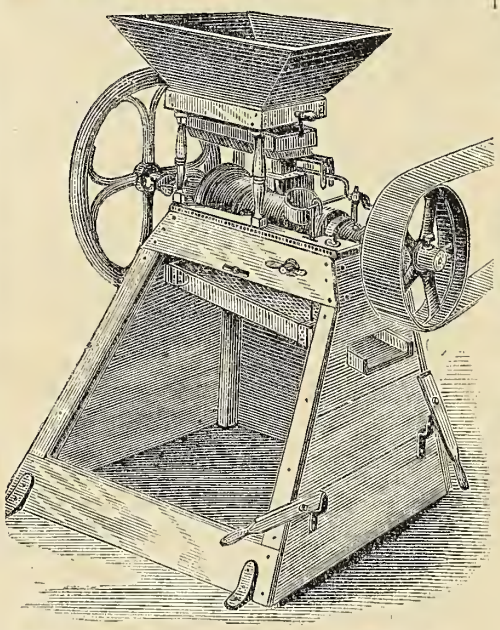


Fig. 5.—BOYER & CO.'S FARM AND FEED MILL.

At figure 5, is the Farm Feed-mill of Wm. L. Boyer & Co., of Philadelphia, a very convenient mill to be run by a two-horse tread-power. This mill is called the "Premium Farm Grist-Mill." The grinding parts are of cast-steel. It was tested at the Centennial Exposition, and we are informed that it received an award for superiority.

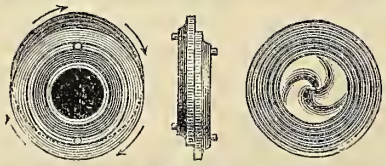


Fig. 4.—PLATES OF THE BOGARDUS MILL.

A mill for a similar purpose, shown at figure 6, is made by the Bradford Mill Company of Cincinnati, Ohio. This mill is intended to grind corn, feed, plaster, cement, and spices. It is under-running, very strong and compact, and quite portable.

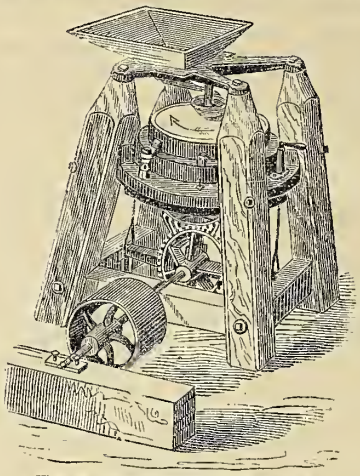


Fig. 6.—BRADFORD CO.'S MILL.

At figure 7 is a mill made by the Straub Mill Company, also of Cincinnati, intended for grinding corn and stock feed by the ordinary horse-power, such as most farmers have, or by steam.

In addition to these there are several others which are equally serviceable, such as the "Conical French Burr Mill" of L. J. Miller, of Cincinnati, made for grinding wheat, corn, and feed; the mills made by the Blymyer Manufacturing Co., of Cincinnati, which seems to be the headquarters for this class of machinery and others, the particular locality of whose place of manufacture will make them conveniently reached by intending purchasers. From our own experience with portable mills we are satisfied that a very great saving in feed may be effected by their use. In our own experience our feed-mill paid for its entire cost the first year.

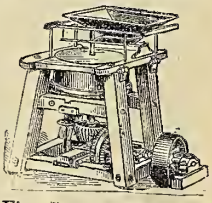
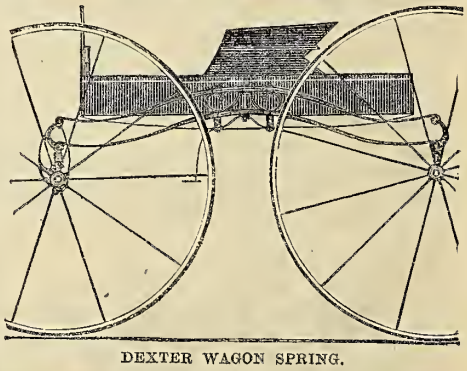


Fig. 7.—STRAUB MILL.

A New Double Carriage Spring.

Some time ago, when being driven over a road so rough as to be impassible to an ordinary vehicle, we noticed that the carriage passed over the obstructions in a remarkably easy manner, without any damage to the springs. We were led to inquire into the character of the springs and the mode in which they supported the body of the carriage, and found that they were known as the "Dexter Springs." Few if any other springs could have endured the test to which these were so successfully submitted. Their construction, which is peculiar, may be understood by reference to the accompanying engraving. They are seen to be double, and braced in the centers in such a way as to throw any strain upon each one equally and at the same moment. This gives strength and durability to them. Their form is very graceful, and adds beauty to the vehicle; their


DEXTER WAGON SPRING.

method of adjustment to the body gives the easy motion of the "side bar" to the carriage, and dispenses with the reach, so that one can drive over obstacles that would be impassible with any others.

This form of spring is especially adapted to rough roads, where there is much strain upon the springs, and upon smooth roads is so easy and comfortable to the driver, that it is equally applicable there. We understand that, although the Dexter Spring Co. of Hulton, Pa., have sent out many hundreds on trial for 90 days, to be returned if not satisfactory, not one has yet been sent back to them.

Hints and Helps for Farmers.

About Gate Hinges.—In figure 1 is shown a plan of firmly securing the upper hinge of a gate in the position desired. The hook or post-hinge should always be provided with a nut for tightening up when the outer end of the gate sags; it is also more easily removed when necessary. The eye portion of a hinge for a large gate should be ⅞ of an inch square where it passes through the heel-post of the gate, and 14 to 16 inches in length, the outer end being ⅞ inch wide and ½ an inch thick. Three small bolts of the proper length secure it to the arm of the gate. In figure 2 is an improved method of preventing hinges working or pushing in the gate or post, and causing the gate to sag. For general purposes a ¾-inch hole is made through the hinge, 2 inches from the hook, into which is firmly driven a small iron pin, 3 inches in length; an iron washer is placed between the gate heel or post and the pin, and prevents the hinge from working its way into the gate or post, or from splitting them. This improvement can be attached to a gate now in use, and work satisfactorily, or the hinge-bolt may be made square near the hinge, and round elsewhere, leaving a sharp shoulder against which a washer or iron plate is placed. When the bolt is put into the gate-post, the washer prevents it from being forced further in.

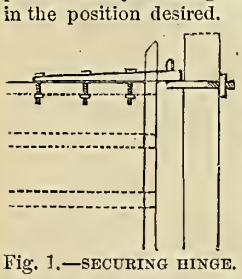


Fig. 1.—SECURING HINGE.

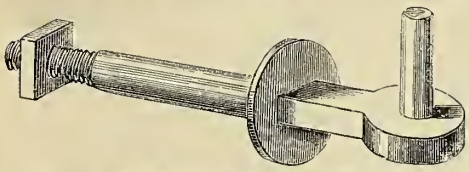


Fig. 2.—IMPROVED HINGE.

A Neat Post, Board, and Earth Fence.—A style of farm fence extensively used in Western New York, which, while it is a good stock barrier, is neat and cheap, is shown at figure 3. The posts, 3½ feet in length above ground, are sawed off square at the top, upon which is placed a 2×3 or 2×4 stringer. The lower board is placed within 14 inches of the ground, and this space is filled up with earth by plowing two furrows upon each side, throwing the first close up to and somewhat under the fence, the other being thrown in position with a shovel; unless it be firmly packed, it should extend an inch or two above the bottom board, to make allowance for settling. This 14 inches of earth embankment, placed where it is, presents a more formidable obstacle to jumpers than 24 inches of board fence would.

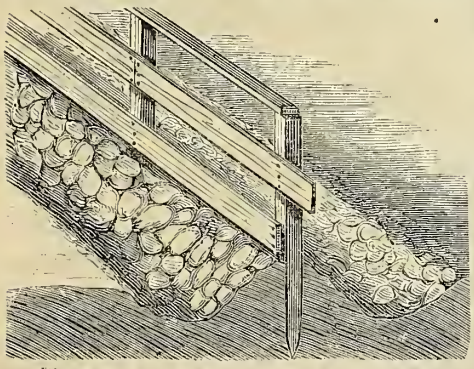


Fig. 3.—POST, BOARD, AND EARTH FENCE.

Double or Combination Bars.—Gates are far more convenient, and afford a more desirable method of passage to and from fields than bars; but these are at least two-thirds cheaper than gates, and a slight modification or addition adds much to their convenience and utility. The two greatest objections to the common bars are the time required to open and shut them, and the liability of the bars to split and break by letting one end fall carelessly to the ground when opening. At any point where a person frequently passes through the bars, the arrangement similar to that in figure 4 will be useful. Posts are placed 2½ to 3½ feet from the fence post, upon which the end of the bars rest when closed. For the passage of loads of hay and grain, the bars should be 14 feet in length. For a person or an animal to pass, the rails are shoved back. For the passage of a wagon the bars are opened in the usual manner.

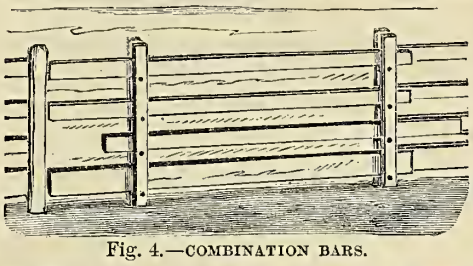


Fig. 4.—COMBINATION BARS.

December Ice.

Ice has become so important in the manufacture of the best butter, and in the preservation of fruits, vegetables, and meats, in the summer, that no farmer can afford to be without it. With a good ice-house, well filled, he can put his perishable products into the home market in first rate condition, and sell on the top of the market. Much of the material for family consumption inevitably spoils for want of ice. Fruits become stale, milk sours, meats are tainted, butter grows rancid, and these losses united cost much more than the labor of gathering and storing the ice. It not infrequently happens that the first of the season is not only the best, but the only opportunity for securing a supply. December ice is generally more transparent and solid than that which forms later with partially melted snow upon the surface. The short crop of last season was owing mainly to the neglect of the December harvest. Good ice might have been gathered then, but every body was waiting for thicker ice, which in many places did not come at all. This was a good thing for the ice men of Maine, but rather expensive for the multitudes further south, that usually depend upon the home supply. Farmers, we are glad to know, are getting more in the habit of using ice, and find it a profitable crop to gather. In the single item of manufacturing and preserving butter, it would save many millions of dollars to the country. More than half the butter sent to the large markets is of the lower grades, and has to be sold at a discount of twenty-five to fifty per cent. With a better preservation of the milk and cream, such as ice would furnish, and nicer methods of making and storing, and sending to market, this immense loss might be saved to the farmers of the country.

A Dump-Cart and a Mink-Trap.

One of our correspondents, W. E. Robinson, sends us drawings and the following descriptions of a cart and a trap used in his locality. The "Dump-Cart" is a handy contrivance, a good deal used in some parts of this State, and is simply an ordinary ox-cart, the tongue shortened and fastened by a king bolt to the forward axle of a wagon, as shown in the sketch. It can be turned very short, as the wheels have a clear swing up to the cart tongue, and is very convenient for hauling anything that is to be dumped: such as stones, earth, wood, manure, etc. The seat of an old mowing machine is fastened to the cart tongue, on which the driver sits. Horses or oxen may be used.

A Mink-Trap is made by boring a 2 inch or 2½ inch hole in a log, 4 or 5 inches deep, and into the edges of this hole drive 3 sharpened nails, so that they will project ½ inch or so inside, as shown. The bait being at the bottom, the mink pushes his head in to get it, but on attempting to withdraw, it is caught by the nails. Musk-rat is good bait for them, and a highly praised bait is made by cutting an eel into small bits, which are placed in a bottle and hung in the sun, and after a time become an oily and very odorous mass. A few drops of this are used.—The above simple mink-trap may be made by using any block of wood, or a stump of a tree, large or small, and the same plan may be made use of to trap skunks, or, by using a small hole and some straightened fish-hooks, it will serve to catch rats or weasels, enemies of the rural poultry yard, which may be thinned off by the use of this trap.

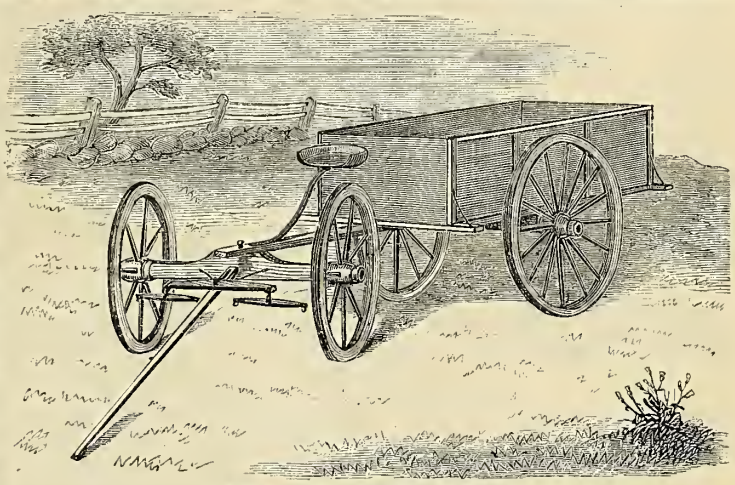


Fig. 1.—IMPROVED DUMP-CART.

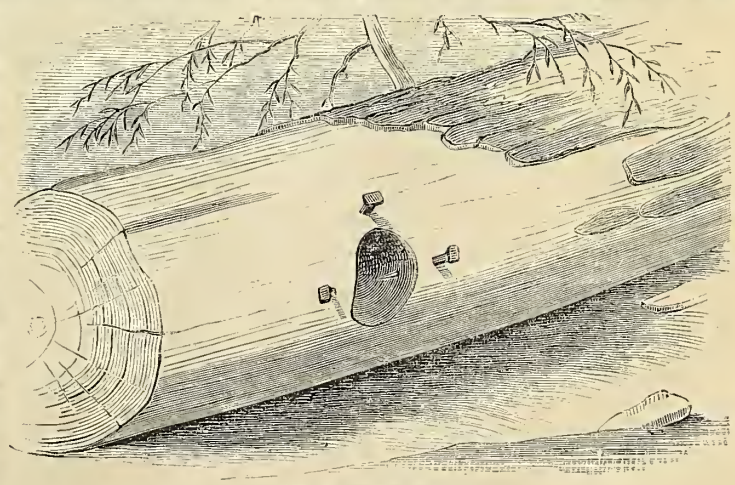


Fig. 2.—MINK-TRAP.

A Simple Double-Gate.

Gates and fences of some kinds must always be used. An outside fence cannot well be dispensed with, and if one has a fence, gates become equally indispensable. However desirable in an economical point of view some sanguine persons may suppose it to be, there is no present probability that we can do without fences, of some sort, and no farmer can avoid having them around his barn-yard, his garden, and often his door-yard. To leave the way to the barn open to the public road, is a serious nuisance, to which no neat, careful farmer can submit. A neat road-way fence and gate add greatly to the appearance of a farm, and if a gate be used at all, we would have a neat strong, but light one. A neighbor, who had learned from experience the discomfort of having the lane to the barn-yard and house open to the road, in a locality where pigs, dogs, and cows, were permitted to run at large, applied to us for the plan of a gate, which was constructed as follows. The opening was closed up by a neat picket-fence, made of chestnut strips 2 inches wide, the posts of this were boxed in with boards, and capped as shown in figure 1, which

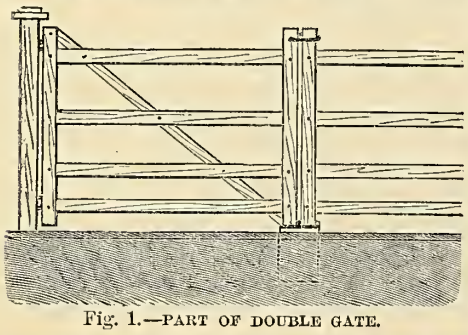


Fig. 1.—PART OF DOUBLE GATE.

represents one half of the gate. The gate was made of chestnut strips, bolted together, as shown, and in two halves. The foot-posts came together, when the gate was closed, upon a block set in the ground, and made slightly sloping, so that when closed there was no weight upon the heel-post, and the gate could not sag. A clevis was bolted to one of the foot-posts, in such a manner as to be turned over the other post when the gate was closed, and to keep it closed. If desired, a bolt could be made to fit into the foot-block, and a latch could be used to keep the gate closed. The use of the sloping foot block, shown in profile at figure 2, is of great advantage, as it takes all the strain off from the posts when the gate is shut, and thus makes it much more durable and satisfactory in use. The caps on the posts are made by nailing on square pieces of board, one smaller than the other, and if a molding is nailed beneath the cap, and around the edge of the boxing, the appearance of the posts may be much improved at very small expense.

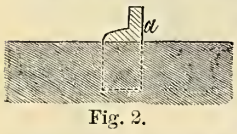
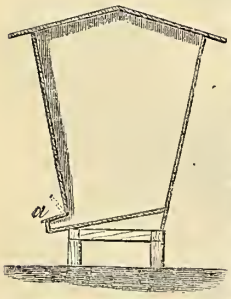


Fig. 2.

A Self-Discharging Corn-Crib.

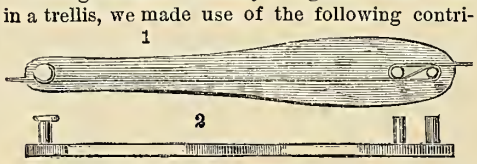
A corn-crib from which the corn may be taken when wanted, without opening any part of the upper portion, or without the use of a ladder or steps may be made as shown in the engraving. The floor slopes from one side to the other, and its lower margin projects beyond the side of the crib sufficiently to permit of a box in which a scoop or shovel can be used. The projecting part of the floor is made the bottom of a box, which is built up upon it, and which is open on the side next the crib, so that the corn will slide into it. A cover is hinged on to the box, so that it may be turned up when corn is to be taken out, as shown by the dotted lines. This cover should be kept locked for obvious reasons. To facilitate the use of the shovel, the opening into the crib is closed for a space of two feet, either in the middle or at each end; at these closed places there will be no corn upon the floor of the box, so that it will be easy to shovel out the corn. In one part of the West cribs of this kind are in common use, but we have not seen them elsewhere.



SECTION OF CRIB.

A Wire-Fence Tightener.

Having occasion recently to tighten some wires in a trellis, we made use of the following contrivance. Into a small piece of wood a few inches long, we put two screws about three inches apart, and near to one end one other screw, leaving the heads projecting about half an inch. By placing the wire between the two screws, and turning the piece of wood around, the wire was drawn tight; and by engaging the head of the single screw upon it, the tension was maintained. The operation of the contrivance is shown in figure 1, and the method of arranging the screws or pins appears in figure 2. By using a strong piece of wood two feet long, and strong iron bolts, fastened with nuts upon the back side, this device may be used to tighten fence wires.



WIRE TIGHTENER.

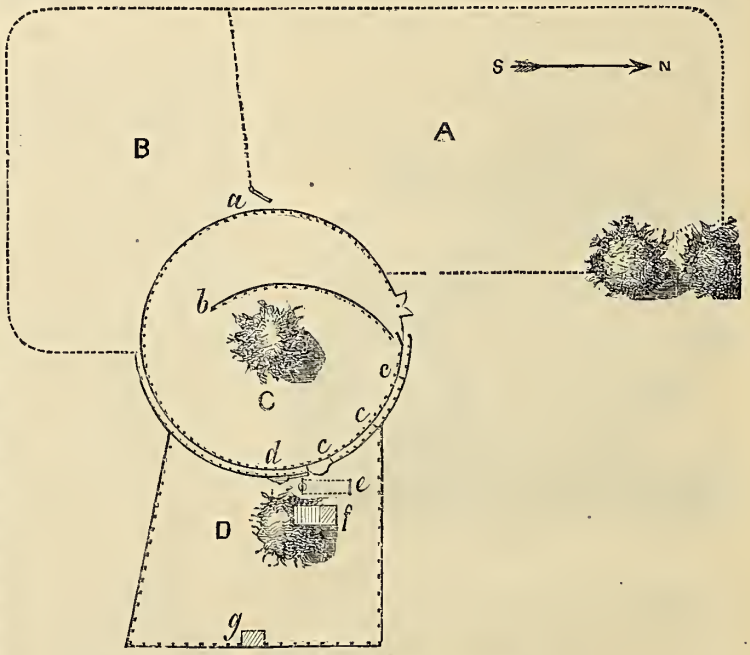
Epidemic Rot in Sheep in Australia.

Another of those occasional epizootic outbreaks, which are frequent in Australia amongst sheep, seems to be just now imminent. It has commenced in the Colony of Victoria, where its effects already have been very serious, and the peculiar circumstances from which it seems to have sprung, and from which it gathers force, are not without instructive interest to sheep keepers in America. The sheep which have died are all affected similarly, the liver, the seat of the disease, being very much infested with flukes. The disease is undoubtedly that known as liver-rot, and is owing to the presence in the mass of the liver and gall ducts, of numerous parasitic worms, commonly called flukes, or scientifically *Distoma hepatica*. There is no question that the presence of these parasites in injurious numbers, is the cause of the disease. The circumstances under which the parasites are encouraged, and find their way into the stomachs and livers of the sheep being known to be present, in this case there is no difficulty in accounting for the fact. The disease has broken out most virulently on the 'runs' or ranges that have been drained, and the drainage water has been collected in ponds from which the sheep have been supplied. No more certain measures for propagating the fluke could have been taken, and none more favorable for its introduction to the stomachs of the sheep. The natural history of the fluke commenced with the eggs, which are discharged from infected sheep in the dung. The eggs remain upon the pastures until they are hatched, when the young creatures fasten upon the herbage until they are swallowed with it by the sheep; or the eggs are washed into the open drains or ponds by rains, where they are hatched, and the young either remain free in the water to be swallowed with it by the sheep, or undergo some other course of life at present not clearly understood. Enough is known, however, of the history of the fluke, to establish the fact of the certain danger that healthy sheep will become infected by an infested pasture or pond. It is the knowledge of this fact that renders it easy for us to prevent the occurrence of this fatal disease, if proper precautions are taken. These are to change the pasture annually; to avoid feeding sheep upon fields manured with sheeps' dung, and to water the sheep only from wells. Localities or fields may easily become so much infested with the parasite, as to make them certainly fatal to sheep, and when this is known, their use for sheep should be suspended for at least two years. So far, in this country, we have been free from this pest in an epizootic, or rather, enzootic form, but as the practice of pasturing of large flocks on the plains of Texas, Colorado, and New Mexico, the prairies of Kansas and Nebraska, and the hills and valleys of California, is increasing year by year, it is necessary that sheep owners be careful to prevent this danger. This may be easily done by avoiding the conditions which produce it. On farms there is more or less of this disease everywhere, especially amongst the larger long-wool sheep, which are most easily affected by it. The fluke is indigenous to our own soil, is widely distributed, and unless the owners of sheep are on the lookout for the trouble, and careful to prevent it, there is no security against an outbreak in any locality, East or West, whenever the season is especially favorable for it.

A Texan Sheep Corral.

BY E. S. NICCOLLS, SAN ANTONIO, TEXAS.

The accompanying sketch is a plan of my corral for catching, dividing, or dipping my sheep; it has advantages not often found in other corrals. It prevents more or less of the abuse incident to handling the sheep in old-fashioned square pens. It also saves a large expenditure of human muscle, which, take it all in all, is about the most costly machinery we can use. I have built the pens, from which this sketch is taken, on a ranch belonging to Messrs. Babcock & Marriner, of Fulton Co., Illinois, and located eight miles west of San Antonio, Texas. They are on a gravelly knoll, where a number of very large live oak trees give a pleasant shade. The shearing floor is located under the wide spreading branches of one of these trees, and is well



PLAN OF TEXAS SHEEP CORRAL.

protected from the sun by the shade it affords. Having been accustomed to handling sheep from my boyhood in Western Pennsylvania, then in Ohio and Illinois, and finally in Texas, my aim, when I took charge of this ranch and commenced the erection of these pens, was to so arrange them as to entirely do away with the square corners, where a few sheep would be jammed and almost crushed every time there was an attempt to divide the flock, or catch a lame animal. The central pen, or corral, figure 1, is 200 feet in diameter, and is large enough to hold 2,000 head of sheep without being crowding, and I know I can catch and mark or divide that number of sheep in less time, with less difficulty and labor, than by any other plan I have ever seen for doing the work. By opening the gate at the head of the side alley (see fig. 2), the opening between the inside of the circular pen and the center, or shut fence, is closed, and one person can walk around quietly and turn the sheep toward the alley, when they will start in and fill up the alley and catch-pen full; by closing the gate at the head of the alley, you will have some 200 head or more confined in the 3½ foot alley. Now, by dropping the slide-gates marked *c*, *c*, *c*, (see fig. 1,) you have the lot of 200 or more divided into 4 lots. Those in the catch-pen are in close quarters and can be caught and marked without disturbing any of the rest. As soon as the catch-pen is empty, by raising a slide-gate, by the cord attached to it, the pen is again filled from the next division; no sheep are disturbed, except those in that division, and so on, as fast as one lot is disposed of, another one is moved forward to take its place. I have myself, alone, kept six men at work all the time catching sheep when we were marking, and I could keep the catch-pen full for them as fast as they could take them out. Temporary movable panels are used to form a connection between the left end of the center fence and the inside of the circle, whenever it is desirable to make the pen smaller or divide it into two lots.

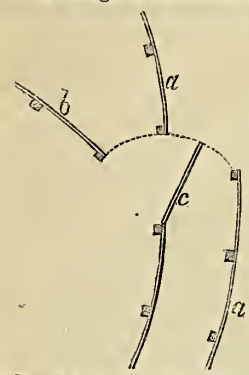


Fig. 2.—SWINGING GATE.

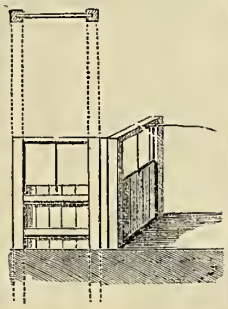


Fig. 3.—SLIDING-GATE.

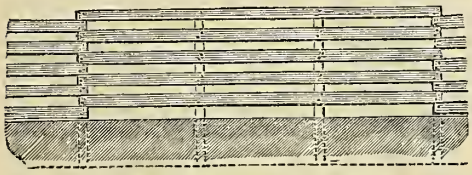


Fig. 4.—PLANK FENCE FOR CORRAL.

The dipping vat (figs. 5 and 6) is set with a space of 30 inches between the side of the vat and the circular fence, so that there is a passage-way for the sheep between the vat and fence, should it be necessary to use the alley-way for counting or dividing flocks. The vat, *a*, is sunk 20 inches in the ground, is 16 feet long, 2½ feet deep, and at the end next to the dripping floor, there is an inclined plane, or plank bridge, *c*, with slats nailed across it, to make it easy for the sheep to walk up and on to the dripping floor, where all that drains from the fleeces is carried back again to the vat. The dripping floor (fig. 6, *b*) is large enough to hold from 15 to 18 sheep at once, and when they are ready to turn out, a slide-gate opens to let them pass into the alley leading to the yard, back of the circular corral. Were I building one for a larger flock, say 10,000 or more, I would arrange to have two large dripping floors, each holding from 25 to 30 sheep, so that, while one lot were dripping off, the other pen could be filled. We have on this ranch over 3,000 head, and the accommodations, so far, are ample.

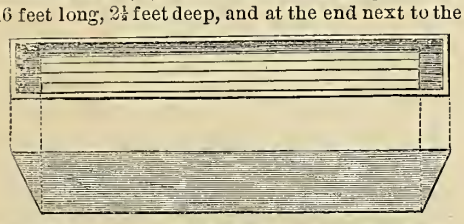


Fig. 5.—PLAN AND ELEVATION OF DIPPING VAT.

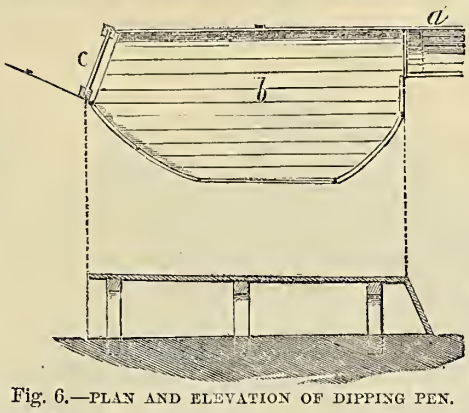


Fig. 6.—PLAN AND ELEVATION OF DIPPING PEN.

The furnace is so arranged that a pipe conveys the liquid from it directly into the vat. (In the draft, or sketch, the furnace is located too far to the right; the walk between the catch-pen and the shearing floor is straight.) The shearing floor and the wool shed are close to the catch-pen, and by taking away a movable panel at the dripping pen, the shorn sheep loosened from the shearing floor, find their way to the corral, back of the circular pen. Our sheep in this country are in good condition, the wool growing interest is fast increasing, and will soon be second to no other in Texas.

In figure 1, *A* and *B* are large pens surrounded with a plank fence, as at figure 4; *C* is the catch-pen with movable fence at *b*. At the end of this is the swinging gate, shown at fig. 2; *a*, *a*, being the outside fence, *b* the movable fence, and *c* the swinging gate. At *D*, fig. 1, is the rear pen, in which is the dipping vat, *d*, and dripping pen, *e*, and the shearing floor, *f*, and the wool shed. At *g* is a shepherd's house. The live oaks are as shown.

Plan for a Hay-Rack.

J. S. Butler, South Bend, Indiana, sends a plan for a hay-rack which is in use in his neighborhood. To make a rack 16 feet long and 6 feet wide, the following materials are wanted: Two pieces of 2 × 6, 16 ft. 6 in. pine or ash, with sound ends and without knots, dressed down to 1¾ inch in thickness; four pieces of ash 2¾ × 2 inches, 6 feet long; four pieces 1⅛ × 2½ and 16 feet long of clear and tough white ash, or white oak; two half felloes for buggy 1⅛ inch square; six pieces of tough ash ⅞ × 1 in. × 10½ inches long; one roller 3½ inches diameter, 2 feet 10 inches long, of hard wood; four pieces 3½ × 39 inches white oak or ash, tapered from the middle to each end to 2½ or 2¾ inches, and lastly, two pieces 1¾ × 6 in. × 2 feet long of oak or ash, and two pieces 1¾ × 4 × 18 inches, cut as in figure 1, the width at the dotted line in the center of the 18 inch ones being 2½, of the 24 inch ones 4½ inches. There will also be needed: eight 7/16 bolts, 10 inches long; sixteen ⅜ bolts, 3½ inches long; eight ¼ bolts, 3½ inches long; twelve 3/16 rivets, 2¼ inches long; six 3/16 rivets, 2 inches long; with washers for both bolts and rivets. To put the rack together, measure 18 inches from the middle of each 6 foot and 39 inch piece, both ways, and bore 7/16 inch holes in all. Then, laying the 16—6 bed rails on edge, measure 2½ inches from the front and 8½ inches from the back end, square across to the other edge, and bore 7/16 inch holes from both ways, to get them exact; then measure forward from the back holes 5—2 inches, and back from the front holes 4—10 inches square across, and bore as before; then 2 inches from the back end and 2½ from the upper edge, and bore ¼ or ⅜ holes for the pins of the binding roller. Now lay the bed rails apart, lay on the 6 foot cross-pieces, and 39 inch pieces below for the bottom boards to rest on, and bolt all together; the bed rails will stick out in front about an inch and a half and behind seven and a half inches, the side strip to stick over also, giving all a better finished appearance, besides making it stronger. Then lay on a 1⅛ × 2½ 16 foot piece, to come just even with the outer end of the cross-pieces, bore ⅜ holes through each, and bolt or rather drive them in just far enough to hold it in place until it comes to putting on the arches, when they will want to come off for handy management; lay another strip with its center 11 inches from the center of the last, bore and drive the bolts as before, do the same on the other side; square the rack true, cut each of the felloes in two equal parts, laying them on the edges which face the side strips in such a position that the crown of the arch will be 3½ inches from the center of the back cross-piece; mark both the side strip and arch, and let each into the other ½ inch; take them off and bolt to their places with the ¼ bolts. Rivet on the little pieces of ash with the 2¼ rivets, three on a side, and rivet them tight, and put the roller in place. To complete the rack, as shown in figure 3, there must be something to keep it from racking out of square. For this get two pieces of 1¼ strap iron, long enough, and have a blacksmith punch 7/16 holes through each end, and slip them on the bed rail bolts which hold on the two middle cross 6 foot pieces where they cross each other; put a good rivet to prevent its pestering nervous ears, for otherwise it will rattle wonderfully. The widest ones of those pieces (fig. 1) go in front, with centers 2 feet from front end, the narrow ones, square under the arches behind, to raise the rack up from the wheels. They may be put on with wood screws and washers, the front ones with ¼ × 5 in., the back ones with 7/16 × 3½ screws. The binding ladder in front I make as in figure 2, quite spreading, so as to pull more from the corners of the rack than is usual; *A*, *A*, are good white oak 1 × 2½ × 5 ft. 6 in.; *B*, *B*, *B*, *B*, are 1 × 2; *C*, *C*, are ⅞ × 1, and are let into *B*, *B*, by cutting into *C*, *C*, ⅛ inch, and riveting with the 6—2 in. rivets of the schedule; the hooks on the lower end of *A*, *A*, engage with bolts having eyes and passing through the front cross-piece just outside the bed rails. My bed rails are pine, but in case ash is used, 2 inches might be cut out, as shown in figure 4, making it lighter and ornamental, and as strong at the same time. I put mine together with zinc paint in every joint, to preserve it. I expect my grand-children to use it, and thought, as it was a centennial year, it should be a Centennial Hay-rack. The measurements are made for a wagon with hind-wheels 19 inches and front-wheels 10 inches above the bolster; and 4 feet 10 inches between wheels at the top. (We shall be glad to see the chaff crib as promised.)

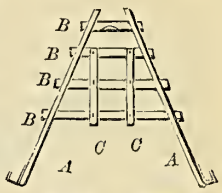


Fig. 2.—LADDER.

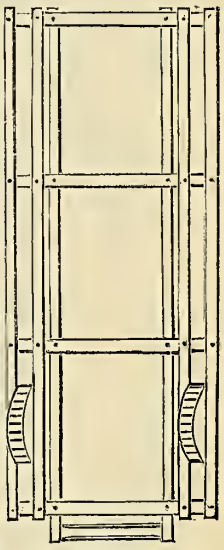


Fig. 3.—RACK.

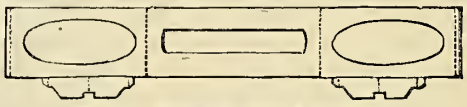


Fig. 4.—BED-RAIL FOR HAY-RACK.

Fig. 1.

The Zebra-striped Eulalia.

One of the most beautiful of ornamental grasses, is the variegated *Eulalia Japonica*, which was sent from Japan several years ago by Mr. Thomas Hogg. It was illustrated in "Hearth and Home" in 1871, and a year or two later was placed in the trade. It is a robust perennial grass, forming, when well established, large clumps, with firm but graceful leaves, which are marked with alternate stripes of creamy-white and green, much after the manner of the old "Ribbon, or Striped-grass" of the gardens, and presenting quite as much variety in the striping. This is taller and more erect than that, and the leaves are longer and more robust. The flower stalks appear in September, and the plant at this time is from four to six feet high. The flower panicles are at first brownish, with erect branches, and not at all showy, but as the flowers open, the branches of the panicle curve over gracefully in a one-sided manner, and bear a strong resemblance in form to what is known as a "Prince of Wales' feather;" each of the individual flowers, which are very numerous upon each branch of the cluster, has at its base a tuft of long silky hairs, and these contribute greatly to the feathery lightness of the whole. This plant, which long ago ceased to be a novelty with us, although it has not ceased to be a prime favorite, is just now attracting attention in England, and has recently been figured, though very poorly, in one of the English horticultural journals. It is offered by some dealers under the incorrect name of *Imperata*. When Mr. Hogg sent this, it was accompanied by another variety of the same grass, which did not survive the effects of the journey. Upon a second visit to Japan, he procured other plants of this last variety, which reached this country in good condition. This variety, which it is proposed to call *Eulalia Japonica*, var. *Zebrina*, the "Zebra-striped Eulalia," in all that relates to form, habit, and its flowers, is quite like the other, but differs most essentially in the manner of its variegation. In the older variety the leaves, according to the usual manner of variegation in grasses, have the markings run lengthwise of the leaf, while in this Zebrina variety, they run *cross-wise*. The leaves, as shown in the engraving, present alternate bands of green and cream-white, of varying width, but with the colors quite well defined and producing a most singular effect. The engraving shows also a flower cluster, which is a little less regular in form than they usually are. Japan is remarkable for the great number of plants with variegated foliage that it has contributed to our collections, but we have not seen any variegation that interested us so much as this peculiar grass. We have seen but one other plant with its variegation so singularly disposed, and that was also from the same country. In the quaint little garden attached to the Japanese Bazar at the Centennial Exhibition, was a Bulrush, (*Scirpus*), the cylindrical stems of which were marked transversely, though the markings were much less positive than in the grass in question. Aside from the ornamental effect of its peculiar transverse markings, this variety has great interest for us in a physiological, or pathological, point of view. It is claimed by some that all variegation of foliage, or at least that in which the green of the leaf is changed to white or yellow, is an indication of disease, and this view is strongly maintained in spite of the numerous instances in which the variegated plants are more vigorous and hardy than typical plain green ones of the same species. To those who hold this view—that variegation is due to disease—this Zebrina variety of Eulalia presents a difficult problem. As the circulation of the juices of the leaf must take place in a lengthwise direction, the nutriment for each green portion of the leaf must pass through one of the colored sections, and those who regard these white, or whitish, bands as marks of disease, will be puzzled to account for the occurrence of green sections of the leaf which, though placed directly between two "diseased" portions, remain in perfect health throughout the whole season of growth. We have no doubt that this variety will, like the other, prove perfectly hardy, and will form a handsome and curious addition to our gardens, and is so unlike the ordinary form that it would make a pleasing contrast with that. We have now among hardy species, the low-growing *Festuca glauca*, the *Panicum virgatum* (mentioned in the next article), the Ravenna Grass, and the Conspicuous Reed (*Arundo conspicua*), and with these Eulalias can be made to form a striking group. Mr. Peter Henderson has purchased the whole stock of the plant, and will, we presume, offer it next spring. It usually happens when we publish an account of a new plant, that a number of persons write to us for it, or to ask where they can get it, notwithstanding that we state distinctly the source from which we obtained it. It is necessary to state, emphatically, that we can not supply the plant, and that the whole stock is in the hands of Mr. Henderson.

THE ZEBRA-STRIPED EULALIA.—(*Eulalia Japonica*, var. *Zebrina*.)

A Native Ornamental Grass—The Tall-Smooth Panic.

A few years ago, as we were at the establishment of a florist who is noted for the great variety of his collections, and for trying whatever is offered abroad, the proprietor called attention to a clump of grass by the road-side, and asked what it was. Upon our informing him that it was *Panicum virgatum*, he uttered an exclamation of surprise, and then informed us that, seeing this grass highly praised in England, he had that morning ordered a lot of it

from abroad; fortunately the letter had not been mailed, and he was saved the mortification of finding that he had imported a plant which grew in abundance at his own gate. Many persons cannot see the beauty of our native plants until it is pointed out to them by Europeans, but we will do our florist the justice to say that the grass had already attracted his attention, and it was on account of its ornamental character that he was desirous of knowing its name. The genus *Panicum* includes the common Crab-grass, so troublesome as a weed, the coarse Barn-yard grass, the Old-witch grass, which in autumn rolls itself into great heaps in the fence corners, and several others, which are far from attractive in appearance. The Tall Smooth Panic, *Panicum virgatum*, is not only the handsomest, but it is the tallest of our Northern species. It is found in Southern New England and New York, near the coast, and farther south, is frequent, especially in poor and sandy localities. It is a perennial, and forms large clumps three to five feet high, presenting a mass of lively green foliage, surmounted by the numerous flower-panicles. The flowers appear in August, the panicles at first being narrow, but as the seeds ripen, their branches spread, and give the whole plant a highly ornamental appearance, which continues until after hard frosts. In describing grasses, terms are used with which those who understand the structure of ordinary flowers, are not familiar, so instead of giving a technical description, we present an engraving, which shows the general aspect of the grass, and will enable it to be recognized. Large clumps may be removed from their native localities to the garden, and flourish fairly, but better plants may be had by sub-dividing a clump, and setting out small bits of the mass; these will soon increase and form more vigorous plants than where large bunches are transplanted. This grass may be used with good effect in sub-tropical groups, and in contrast with the Arundos, and other tall-growing kinds.

THE TALL SMOOTH PANIC.—(*Panicum virgatum.*)

RAFFLE'S PITCHER PLANT.—(*Nepenthes Rafflesiana.*)

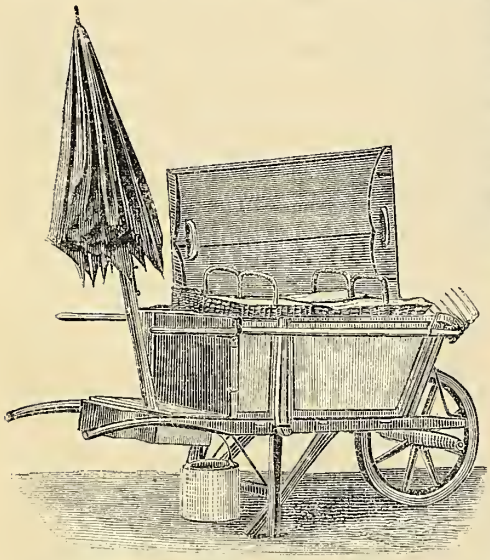
About Pitcher Plants.

Those who attended the Exhibition of the New York Horticultural Society, held at the Hippodrome in September last, saw, among the many fine plants that were brought together, a collection of Pitcher-plants from Mr. George Such, South Amboy, N. J., that formed one of the chief attractions of the Exhibition. Our native Sarracenias are called pitcher-plants, but those to which we now refer are exotics, mostly from the East Indies, and belonging to the genus *Nepenthes*. The ancient *nepenthe* or *nepenthes* was some narcotic plant, and it is difficult to see why it should have been given to these pitcher-plants. In our native pitcher-plants, the pitcher is formed from the leaf stalk, which is very much expanded, and rolled up to form a kind of cornucopia, the edges being securely joined, to hold water, while the little appendage at the top, which might serve for a lid to the pitcher, is all that answers to the blade of the leaf, or the leaf proper. In *Nepenthes* we have a very different structure; the leaf, which is usually long, has a very strong mid-rib, and this is prolonged beyond the end of the leaf as a strong, cord-like appendage, several inches in length, and sometimes coiled, and answering the purpose of a tendril. At the end of this is borne a peculiar organ, properly termed a pitcher, as it serves the office of a pitcher in containing water, and is furnished with a neatly fitting lid. The real nature of the pitcher has been the subject of much discussion, the most generally accepted view being that it is the peculiar development of a gland at the end of the mid-rib. The pitchers vary in size and shape; in the oldest of these plants (*N. distillatoria*) these are cylindrical, about 6 in. long, not more than an inch through, and green. In others, of which *N. Rafflesiana*, the one here figured, is an example, the pitchers are much broader in proportion and from 6 to 12 inches in length; they are furnished with wings, and are beautifully spotted and marked with red on a dark-green ground; in this and others the edge of the mouth of the pitcher is rolled inward and marked with cross-lines; here the lid is sufficiently large to cover the mouth, but in some species it is much smaller. In this, as in some others, the pitchers upon old plants are quite different in shape from those produced earlier, and are without wings; the upper pitcher in the engraving shows this peculiarity. *N. Hookeriana* is another choice species in Mr. Such's collection, which indeed comprises about all that are worth cultivating, and when

grouped together, as they were at the exhibition, could not fail to attract the most indifferent spectator, and presented a striking illustration of the odd and strange in vegetable forms. In most, if not all the species, the water they contain is secreted before the opening of the lid shows that the pitcher is fully developed. It is known that this liquid has the power of digesting animal substances, and observations upon the plant in the wild state will no doubt show that, like the pitchers in *Sarracenia* and *Darlingtonia*, these are intended as insect traps. Some of those books which pretend to set forth the wonders of the vegetable world, have a remarkable story about the Nepenthes. According to these writers the plants, by their stores of water, are especially adapted to live in arid deserts, where other plants cannot exist, and they show how providential it is that these pitchers of water are at hand to sustain the thirsty traveller in those inhospitable regions. A pretty story, and a pity to spoil it by the hard fact that these plants grow only in tropical bogs and swamps, where the atmosphere is always humid, and anything like the soil or air of an arid desert would be death to them at once. Unfortunately pitcher-plants can never come into general cultivation, as they need a degree of heat and moisture that can only be obtained in a house devoted to these and other plants of similar requirements. They are found to succeed best in a mixture of fibrous peat and sphagnum moss. They are very often grown in baskets which may be hung at such a hight as to give the best view of their interesting pitchers. The Nepenthes have their male and female flowers in separate plants, but the flowers are not showy, and plants are cultivated only for their strangely formed and often beautifully colored pitchers.

An Improvement in Wheelbarrows.

The wheelbarrow, it is said, was invented by the noted Italian artist, Leonardo da Vinci. That it was the production of so capable a man is possibly the reason that it has remained for centuries unaltered, and considered so far incapable of improvement. But now-a-days our wants are so many, or our wishes are so exacting, that for some uses the present wheelbarrow is not satisfactory. In the



MR. BEACH'S WHEELBARROW.

garden the wheelbarrow is very useful, even in its ordinary construction, but in the shape in which it is presented in the accompanying illustration, it will be still more useful. The additions and improvements here described are the result of the ingenuity of Mr. E. D. Beach, of Hartford, Conn., to whom we are indebted for a photograph from which we make the engraving. They are as follows: a rubber wheel-tire by which more quiet and easy rolling is secured; two springs fitted to the axle, which prevent jolting; a wheel-lifter, or a second pair of longer legs, by which it may be lifted over obstructions, by pushing forward the leg frame and bearing down upon the handles; a movable water-pail hook; drawers for seed, etc.; a seat with a socket for an umbrella or sunshade, to be used while resting; four buckled-strap loops for holding tools; four partitions for various uses; two sliding-doors for quickly emptying it of its contents; four baskets fitting into the partitions, and, lastly, a movable cover made to fasten by a latch or catch. Each and all of these may be removed at will, except the rubber-tire. Some of these appliances will be found useful for any wheelbarrow, and others are intended for special work in the garden and orchard, where one wishes to have all the tools he is likely to need at hand in a convenient manner. It is really converting a wheelbarrow into a portable tool-house. Mr. Beach writes us that he has spent three years in perfecting his wheelbarrow, but he will be sufficiently repaid for his thought and labor by freely conferring the invention, with whatever of value or usefulness it may possess, upon the public; this he does through the columns of the *American Agriculturist*, without any other compensation than results from doing whatever good he may. The additions are therefore free to everybody to adopt.

The Oyster-shell Bark-Louse.

The increased frequency with which specimens are sent for determination, shows that, notwithstanding all that has been published in this and other journals, this serious orchard pest is not generally known. It is so small, and so near like the color of the bark, that its presence is often not suspected, until the trees are in a condition that unfits them for nearly everything else but fire-wood. Every one who has an orchard, or a single tree, should be familiar with the appearance of this insect, and on the look-out for it, and we again give an engraving, (this is from Riley's first Report), that shows the insect in the dormant state, of the natural size. Entomologists have now settled down upon *Mytilapsis pomicorticis*, as the scientific name of this insect. Its habits may be briefly stated: Starting with the insect as it appears in the engraving. If one of these brown or gray colored scales, which is shaped much more like a mussel-shell than an oyster-shell, be lifted, and examined with a magnifyer, it will be found to cover a number of pure white eggs. These remain until June, when they hatch, and the young insects, then in the larval state, travel to the new twigs, insert their slender trunks or suckers, and are thereafter fixed. Soon a scale begins to form from the secretions of the body, and the insect undergoes several changes. The male insect, after becoming a pupa, finally comes out a perfect winged insect. The female never leaves the scale; in her changes she loses her feelers and her legs; it is supposed that she is visited by the male, and soon after lays eggs; the scale is increased by layers, each projected from the one previously formed. As the eggs are laid, the body of the female shrinks, and she finally dies, leaving a mere speck, scarcely to be distinguished, at the narrow end of the scale. A full account of this insect is given in Prof. C. V. Riley's 1st and 5th Reports on the Insects of Missouri, in which will be found a detailed history, of which this is a meagre synopsis. The insect moves for only a few days after it is hatched, and all the rest of the year is fixed, or in the egg state. To attack it when just out of the egg, were it then noticed, would hardly be practicable, as the trees are in full leaf, and as the scale is impervious to ordinary applications, the insect has been regarded as one of the most difficult to destroy. As with other insect pests, as they increase, their enemies increase also, and render good service in keeping this in check. In 1868 Mr. D. A. Norris, of Greenville, Conn., purchased a house, and among some trees on the grounds was one badly infested with this scale. As the painters were at work upon the house, he took a brush, and painted the tree "from stem to stern," and the next year wrote us that the tree was not injured in the least, and not a scale was to be found. We mention this to show how discoveries coincide; about the same time Dr. Le Baron, of Illinois, discovered that lard and linseed oil were most efficacious remedies; it was the oil in our friend's paint that did "the business," and oil is now regarded as the best application for the destruction of the scale. An undrying oil, like lard or neat's-foot, is preferable to linseed, and though the application has been made in various parts of the country, we have seen no injury to the trees reported. No doubt that much of the spread of this bark-louse, and its occurrence in widely separated localities, is due to the sending out from nurseries of trees thus infested. It is a wise precaution to minutely examine every tree before planting, and if the scales are at all numerous and can not be readily and surely destroyed, *burn* the tree at once.

BARK-LOUSE

The Sorrel-Tree.

Perhaps the only way to popularize really good but neglected plants is to keep talking about them. We have, on more than one occasion, had words of praise for the Sorrel-tree, *Oxydendrum arboreum*, and mentioned its value for its late blooming, producing in July long clustered racemes of Lily of the Valley-like flowers, and that the fruit, which hangs on until winter, is also pleasing. It is a native of Pennsylvania and southward, and is quite hardy in Massachusetts. One of its great merits is, that though it will grow 30 to 60 feet high, it will bloom when only 4 to 6 feet high, and serves either as a shrub or a tree. Our reason for mentioning it now is to call attention to the beauty of its foliage in autumn. Were not our forests so generally beautiful we should pay more attention to this feature in planting trees and shrubs than we now do. There is good reason why we should consider autumnal effects in planting, especially as our trees that are fine in this respect are generally desirable in their green foliage. This year our autumn colors have been much less brilliant than usual, a matter to be regretted, as so many appreciative Europeans are now visiting us, and by far the most brilliant display of color that we have seen has been made by our clump of Sorrel-tree. The foliage began to turn a dull red and finally blazed out in the most intense of crimsons, almost dazzling when the sun shone upon it. The tree has another good quality, the leaves remain on a long while after they change, and we have this year enjoyed their brilliancy for between two and three weeks. The Sorrel-tree is one that we can heartily recommend to the attention of all lovers of really choice trees and shrubs.

Roses in Window-Gardening.

There is no plant with which those who follow window-gardening so much desire success, as the Rose, and none that brings such a regular crop of disappointment. The number of letters we receive every winter, embodying in one form and another, the general question, "What is the matter with my roses," is quite surprising. Of all flowering plants the Rose is the most highly prized, and there is none, even among the hardy out-door kinds, so beset the whole season through with one or another of its peculiar pests. The lack of success in window cultivation may be due to one of several causes. An unsuitable variety, improper previous treatment, bad soil, too much heat, mildew, insects, and over-watering, will either one of them be sufficient to account for the "bad luck," and it often happens that there are several of these causes combined. Whoever succeeds in growing roses satisfactorily in a house of the modern style, where the tight

windows are made tighter by weather-strips, and the furnace in the basement renders the air unfit, not only to plant and human life, but the very furniture rebels by cracking, achieves a horticultural triumph. On the other hand, in country houses, which city people would regard as far from comfortable, and where of a cold night the plants must be moved away from the window and covered with a blanket, we have seen roses flourish as well as one could wish. The roses known as China, Bengal, or Monthly, and some of the hardier Tea roses, are best suited to window culture. The old "Daily Rose" belongs to the China class; both the blush and white varieties, are among the most certain of any. In purchasing roses for window culture, the advice of an intelligent florist will be safer than one's own selection from descriptions in books and catalogues. Be sure that the roses have been *grown in pots*, and not taken up from the open ground and potted, as they rarely recover in time to be of much use. As to soil, it matters little what it is, provided it is porous, as liquid manure may be used if it is poor, but if it becomes soggy and close, the plants will fail Roses when growing need at most a temperature of 70° in the daytime, and it may go 15° to 20° lower at night. Do not overwater; always let the soil get a little dry on the surface before watering. Turn the ball of earth out of the pot occasionally, and see if there are angle worms; if they can not all be picked off, water with clear lime water. Shower as often as convenient; once a week at least, but twice or three times is better; set the pots in a bath-tub or sink, and shower with a fine sprinkler. If plant-lice appear, shower with weak tobacco water, or if the plant is small, dip it in the tobacco water. Sudden changes of temperature and cold drafts are apt to cause mildew, and should be avoided in airing. When a shoot has bloomed, cut it back to a good bud; do not be afraid to use the knife.

Mistaking a Friend for an Enemy.

An Ohio correspondent complained that his pear and cherry trees had their leaves quite skeletonized by an insect, of which some were sent in a letter. They were crushed past all proper identification, and we sent for more to be forwarded in a box; they came, and proved to be the Twice-stabbed Lady-bird (*Chilococcus bivulnerus*), which does not feed upon plants, but is carnivorous in its habits. The larva is blackish and prickly, and looks ugly enough to do any amount of mischief; this goes into a pupa state, cracks open on the back, and liberates a polished black Lady-bird, with a red spot on each wing-case. Our correspondent wrote that the insect appeared first as a slimy slug, next as the hairy fellow, then as a shiny bug, and that he had tried all sorts of destructive appliances, even to Paris green, without any apparent benefit. It is a great misfortune that people in general look upon all insects as "bugs," and on all bugs as injurious. Our Ohio correspondent had been industriously trying to destroy his very best friend, that had come to his assistance in ridding his trees of that miserable slimy, slug-like larva of *Selandria Cerasi*. There are bugs and bugs, and one of the important things for a gardener to learn, is to distinguish his friends from his enemies.

GOVERNORS AND GRASSHOPPERS.—The Governors of eight of the States and Territories most liable to the devastations of the grasshoppers, met at Omaha, Neb., on Oct. 25th. Our correspondent, Prof. Riley, who probably knows more about these insects and their work than any one else, was present. A committee was appointed "to issue in a pamphlet form all the most practical means, based upon experiment, for the destruction of grasshoppers." According to the report an appeal is to be made to the President, "setting forth the urgent necessity of action by the General Government in behalf of the sections ravaged." As the meagre telegraphic report does not state what "action" is asked for, we do not understand what is expected from the government. Is this to introduce a new element into politics—if not a sectional element, at least an *in-sectional* one?—Shall we have to inquire of a candidate for Congress instead of the former: "Is he sound on the goose?"—"Is he sound on the grasshopper?" However, it is no joking matter to the grasshopper-ravaged districts, and it is hoped that this action of the States and Territories most interested, may lead to co-operation on the part of the people, for unless this scourge can be stayed it will depopulate some of the finest portions of the West.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Trying to do Everything.

Not long ago I wrote about doing "the nothing" for a family, which is a very different thing from having "nothing to do," and not half so tedious. Since then I have been left for a little while with *everything* on my hands. Had not disappointment been the principal crop left to be harvested, this would not have happened. To hire a man's help for a few days when most needed, is easier planned than accomplished, for neighbors are all busy when early frosts are expected. It is not very hard work, to cut and bind corn, working with a little boy who knows how to do the work, but has too short arms to manage well alone. A day's work at corn cutting is not so tiresome, as a half day over the wash-tub. But as dinner-time approaches, it seems a little tough, to have to take the coveted rest only by "change of employment," and hurry in to get dinner. I have thought the same, however, when obliged to leave the washing to get dinner, and then to go back to the tub, as soon as the dinner work was hurried through. Out-door work, as far as I have tried it, is not so wearisome to the mind, as house-work. Indeed, it seems restful to the mind. It, no doubt, makes some difference what you work at, but out-door work that I have tried, does not keep one mentally "on the stretch," like housekeeping, combined with the care of young children. I will not say that housework and farm-work can not be carried on simultaneously by one individual with success, but I have strong doubts about it, as the result of observation and experience. One morning last spring a neighbor called, and found me on my knees, pulling weeds in the onion rows. The work was mechanical, and in no way confined my thought, so I was enjoying myself first-rate. As I rose to answer her greeting, I became aware of my own "unpresentable" appearance. We went into the house, and found disorder everywhere. The hired girl was working away at her ironing table, with unperturbed spirit apparently, much more tidy in appearance than her mistress. She had put the rooms in order once that morning, but there had been no one to keep them in order. The broom, having served for a horse, lay sprawled in the middle of the floor, and all the chairs in the apartment were drawn up around one corner to form a stable. Dolly-things were scattered about, mixed with paper cuttings. I never see anything like this, without making many "general reflections," and often I am led to conclude that I may have judged other housekeepers quite uncharitably, from the appearance of things.

I believe in work most heartily, but I believe also in a division of labor. It is a good thing to learn how to do everything that comes in one's way, if the learning can be done without over-balancing loss. "*Can do* is easily carried about," and any particular knowledge may serve us well in an emergency, but a person who undertakes to fill a great many offices at once, in his or her own person, works against the best social order.

Here and there I have had among my neighbors women, who performed almost or quite a hired man's part in out-door labor, superintended the in-door establishment, and did much of the work themselves, and at the same time bore and nursed babe after babe in steady succession. I might have written to some woman's paper, bragging of what our sex could do, but such a sight always fills me with shame—shame on account of the ignorance or wickedness of members of that *other* sex, which our sex is helplessly bound to love, and which we long to look up to with reverence. "They know not what they do," or they would never suffer mothers to be so over-loaded.

I don't believe you will find the most pleasant homes, where the women-folks do a large part of the farm-work. As a general thing the wife and mother can serve the family interests (if not the family purse) best, by keeping to her part as director of the housekeeping and especial guardian of the little ones. But every true brother and sister in our big human family should stand ready to "lend a hand," whenever and wherever there is a decided call for help, and ability to obey the call, without detriment to higher interests.

How Much will the Mangle Do?—A "Long Felt Want" or Two.

I was interested in "Mangles Old and New," in the October *American Agriculturist*, as I am in all labor-saving inventions and devices. But how much of a family ironing would the mangle do? Towels, napkins, table-cloths, sheets and pillow-cases—all straight, square, or oblong pieces that can be folded evenly. But this is the easiest part of the family ironing, especially after the folding has been done. If these articles are sufficiently smoothed by the mangle when folded to several thicknesses, why can they not be ironed folded less thick, instead of passing the iron over the entire surface before folding? I do not see how a mangle can give the polish to table linen, upon which many housekeepers pride themselves, and I am afraid it would make poor work with children's garments.

The starched clothing is the hardest part of the ironing, especially when ruffled and puffed. Prints, ginghams, lawns, etc., look decidedly better if starched, than when ironed without this preparation. I wish this was not the case, for the starching is not only a task in itself, but it doubles the labor of ironing. When I do the family washing myself, I usually get along finely until I get to the colored clothes—then comes "the tug of war." The hardest rubbing comes upon the little frocks, and aprons, and trowsers, for hot suds, chemicals, and machinery, are not to be depended upon among colors. And then the starch—if it were only ready prepared, so that I need only empty a little from a bottle into my rinsing water, what a bother it would save! A reliable starch preparation of this kind might be classed among "long felt wants." Let me hint to the would-be inventor of this *desideratum*, that it must also possess the property of making muslins and linens easy to iron! And while you are about it, please make it cheap!

Let us set down also, among "long felt wants," an ironing machine, which will not only mangle straight and plain articles, but gored and puckered and plaited ones, both starched and unstarched, without heat, if possible, and with very small expenditure of human muscle.

Ah! why not? yes, let us set it down as the greatest want of all—some cheap and strong and agreeable fabric, that need only be washed and shaken out to make it look quite "as good as new," and so save all the labor of ironing. I will not go further and wish for garments that will not spot or soil—at least not for this world. Labor is a blessing, and there is a beautiful significance in the cleansing of soiled clothing, and a use for the soap suds after it has done duty in the washing; but all hail to the machinery that lightens the labor!

Why Save Labor?

Speaking of mangles reminds me of the first one I ever saw in operation. At least it was a method of ironing by pressure. It was a Latin Lexicon, atop of somebody's "Unabridged Dictionary," and seated upon these two books was a young lady college student. Under the hooks, lying on a low box, were two sheets, folded carefully—in process of being made smooth by pressure! When these were taken out, probably other articles would go in. This was told of, among the students, as one of Miss H.'s odd ways. Some approved, and some

shook their heads and "inquired for the old paths." The latter class probably never worked their way through college, as did Miss H. One who was inclined to approve, soon after drifted among the New England "notable housekeepers," and afterwards expressed to me her abhorrence of all such "shirking" performances. At that time the housekeeping mania was upon her, but long before this she has learned, by lesson after lesson, that she must try to save labor if she would save her health. Another one of that band of students, who married before I did, wrote to me after three years experience: "If I should do my work every day as I know it ought to be done, I should not only get extremely tired, but I should never have one moment for reading or writing letters."—I think it was her inability to satisfy her own too exacting ideal as to what her housekeeping should be, and the same feeling about training her children, which worried her into her grave a few years later.

I don't know as it is possible to be too neat, but I do know that one may break one's back and break one's temper in a vain endeavor to attain and preserve perfect cleanliness, and succeed only in making everybody uncomfortable and herself a fretful uncompanionable drudge. Probably most of my friends would never suspect this, judging by appearances, but I have indeed gone too far in this way myself for a little while at a time, and the savage things I have been led to say, with patience worn thin and nervous power exhausted, have caused the "party" most interested in my companionability to beg me just to let things go for awhile until help might come from some source—not to try to "keep up even" (as I call it), but just manage to live along from day to day. Whew! It is impossible! I have been in some hovels where that method is in vogue, and I shall never cease trying to be decent. My standard is not a fixed and immovable one, and its lowest mark—for the years while children make work and help little—is held so low that I can never fall below that without conscious disgrace.

No woman should allow herself to become a mere household drudge. Even if perfect neatness from cellar to garret—floors clean enough for dining tables, etc.—can be maintained by the devotion of all her time and strength to the work, the sacrifice is far too great. We all have a variety of duties, and if their number be too great for our powers of accomplishment, we must lay them all out before us, and decide reasonably which are most important, and then cross off from the list those which are least essential, until we bring the number within our ability. It is as wicked to waste labor as to waste anything else; and it is only reasonable and righteous to perform our necessary mechanical tasks with the least possible expenditure of time and strength required to do them *well*—to call in the aid of chemistry and natural philosophy, whenever we can, to save time for reading and study, and social enjoyment and deeds of charity.

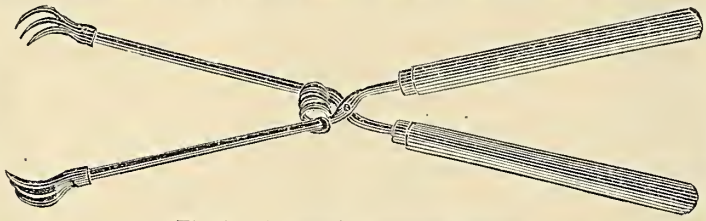


Fig. 1.—"LADIES' FAVORITE" TONGS.

Children's Picture Books.

It will never do to buy for a child the first thing that comes to hand in the way of a picture book. At some stores, where there seems to be a large stock, it is difficult to select anything satisfactory. Very young children seem best pleased with pictures of familiar animals—a gentle cow, a frolicsome kitten, a good-natured dog, or a steady-looking horse give great delight to a child under two years of age. There have been so many babies in this world already, that one would suppose publishers would have learned their needs ere this, but I have pulled over great piles of gay picture books in search of good animal representations, and have found nothing better than "The Three Bears," or "Three Little Kittens," or "Three Blind Mice." To furnish children with these, and only such as these, seems like giving them stones when they ask for bread. They like animals in their own natural characters better than when dressed up in human clothing and acting in burlesque of human manners. Once a little book with a pretty picture of "Little Red Riding Hood" on the cover was hastily purchased and brought to me to send to a little two-year-old daughter, then spending some weeks with her grandmother. If you could see the illustrations of the frightened grandmother when the wolf is about to eat her, and of the horrid wolf in grandmamma's bed wearing her cap, you would not wonder that I burned the book rather than harrow a baby's feelings with it. Another mistake was made last winter. In purchasing Christmas gifts rather too hastily, a big primer, supposed to be suitable for a child just learning to count, found its way into the bundle, because it illustrasted the rhymes beginning with "One, two, Buckle my shoe." Possibly I am too particular, but I couldn't wish my children to be amused by the great blubbering boy thrusting his big foot in his mother's face, the white maid's scorn of the black cook in the kitchen, or the courting scene to illustrate thirteen fourteen. I kept the primer out of sight for some time, wondering what I should do with it, then gave it to the baby, who was crying for some "kitty meow" picture, on account of the picture it contained of a big cat "waiting" (to rhyme with eighteen) for a mouse in a trap. I was glad to find the book unanimously condemned by the children critics, who pounced upon it. They had not all of my reasons for disapproval, but they like to find pictures tolerably true to nature. I believe children usually do, though they learn to like caricatures after awhile. There are pleasing colored picture books to be found, and there are charming cuts in many of the little story books and children's magazines now published. This being the case, it is a pity to buy poor ones. I wouldn't like to banish "Mother Hubbard" and all her crew, but these ancient worthies must consent to take a subordinate place in journal literature and art.

Handy to Have in the House.

A well stocked house-furnishing store is to us a most interesting and instructive place to visit. It is wonderful to see the various contrivances for performing household operations, and the numerous little conveniences that go to make domestic matters run smoothly, but are classified under the general head of "Notions." The amount of inventive skill, as we two or three years ago showed in some illustrated articles, that has been directed towards making the simple operations of beating eggs and grating nutmegs more perfectly and easily performed, is as great in its way as that displayed upon much more important inventions. Labor saving, time saving, and comfort in working, seem to be the ends sought for in these various house-keeping contrivances. We do not mean to say that these ends are always accomplished, for some of the affairs, though ingenious, are in use more trouble than the task itself, but on the other hand there are many others, which are very useful. It is a capital exercise for ones own mechanical skill to go through such a store and endeavor to ascertain by the examination of the various articles the purposes for which they are intended. We have often wondered who invented these things and where they were made, and our curiosity was satisfied with regard to some of them, at least, by receiving from Mr. G. J. Capewell, of Cheshire, Conn., a parcel containing a number of his inventions and productions, a few of which are here illustrated. Figure 1, shows a pair of light tongs, which, as all these things must have titles, goes by the name of "Ladies' Favorite." They are made all of metal—galvanized iron—or with wooden handles. The lower ends have three prongs, and they open by a spring. The uses for such an affair are many, taking various articles out of boiling water, roasting oysters, taking fish out of brine, and a hundred things where the hands should be saved from hard usage. The inventor claims especial excellence for this as a dish-washer, and particularly to wash out the inside of fruit jars, pitchers, and other articles which the hand can not enter. Another useful affair is called the "Victor Knife and Scissors Sharpener." It is said to be an alloy, which from its hardness is called "diamondized metal." It is to all intents and purposes a steel, and a most excellent one, whether it be due to the metal, the peculiar shape, shown in figure 2, or both together, it is the most sharpening thing of the kind we have come across. More fanciful than the foregoing is the "Cinderella," which is a trade name for a new Pie Crimper and Ornamenter. The grooved wheel is used for printing rosettes, and also to run along the edge of the pie to crimp it; on the other side, opposite the wheel, but not shown, is a set of blades which cut ventilating holes in the crust in the form of a star. The same concern makes tack hammers and various other articles handy to have in the house.

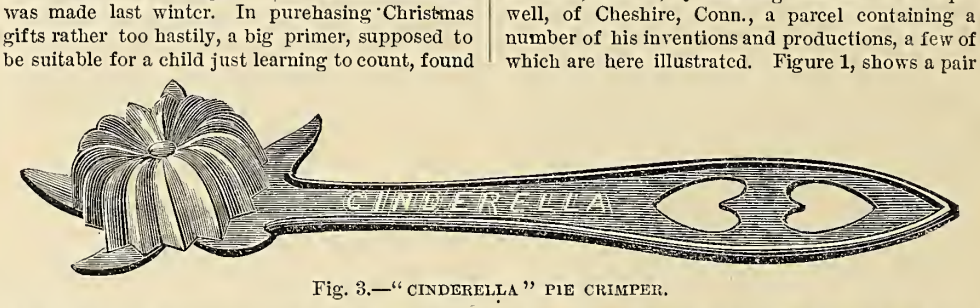


Fig. 3.—"CINDERELLA" PIE CRIMPER.

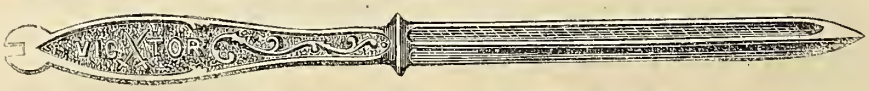


Fig. 2.—"VICTOR" KNIFE AND SCISSORS SHARPENER.

Home-Made Easy Chairs.

Several correspondents have, within a few months, asked us to give them directions for making comfortable easy-chairs from cheap materials. In the back volumes are several designs which may meet the wants of some of our correspondents. It is not our practice to republish such matters, unless there may be some unusual reason for doing so, as back numbers for the last 20 years are kept in stock, and can be supplied on application. Indeed, so many are the requests for things which we have already published and illustrated, that were we to comply with all of them, the paper would sometimes be made up of articles that have before appeared. As to chairs, the article in June of last year, (1875), on page 229, gives the very simplest plan of a chair. We do not see how it is possible to construct one with fewer pieces; it has the disadvantage that the back must always slope considerably, and it does not allow of any change. Still this gives a good idea for a foundation, and it may be made of any rough lumber, furnished with arms, and stuffed and covered to make a very acceptable easy-chair. In December, 1874, p. 463, was given an engraving of a chair, which we saw at the St.

Louis Fair of that year, and to which we gave the name of "Missouri Hoop-pole Chair." It is made entirely of hickory or other saplings, such as are used for hoop-poles; as these allow of bending, the out-lines of the chair are rounded and graceful. Those who have suitable wood at hand can, by the aid of the engraving, and the necessary nails and screws, make an excellent frame-work, which, if it is to be stuffed, will not of course need so elaborate work as shown in the engraving referred to. In Faith Rochester's "Home Topics," published in September, 1874, page 435, some diagrams for a "Corner Chair" are given, but as the com-

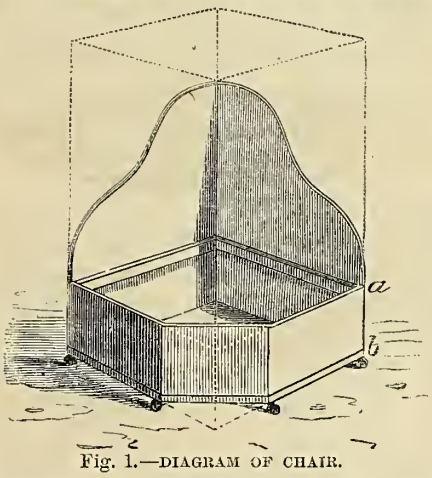


Fig. 1.—DIAGRAM OF CHAIR.

plete chair has not been published in the *American Agriculturist*, we give it here. It was intended to be made from a large dry-goods box, but Mrs. R. constructed hers from boards, and those who prefer to build one in that manner, are referred to the diagrams given on the page above named. The box to make the chair should be 3 ft. square, and when set on end, 4 ft. high. Fig. 1 gives a diagram, showing the out-lines of the box, and how it is to be cut; the portion from *a* to *b*, should measure 14 inches. All the corners should be securely nailed, and cleats placed to hold the seat, which need not be fastened in, as the space below can then be used for the storage of such articles as are not often wanted. Five strong casters, one at each angle, being put on, the chair is ready for stuffing and covering. It is shown complete at figure 2, where two pieces of carved wood, *c*, are put on as a finish, but to our notion the chair looks better without them. In stuffing such chairs, any coarse fabric will answer; bagging that has been used for packing goods, quite as serviceable as new, may often be had at the stores for a trifle. As to the stuffing material, that is rather more difficult. Of course curled hair is the best, but if one is going to this expense, a chair

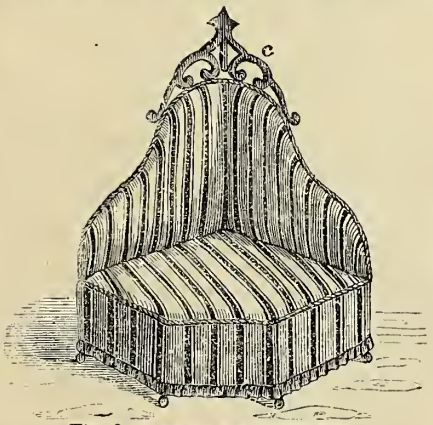


Fig. 2.—THE CHAIR COMPLETE.

had better be bought out-right. Good "moss" will answer, and the upholsterers have a material called "African Palm," which is quite satisfactory. Sea-weed soon gets ground up and useless, and is inferior to hay run through a cutting machine; if wiry and elastic bog-hay be selected, it is perhaps the best cheap material, unless it may be corn-husks, prepared beforehand. If *green* corn-husks be shredded by means of a fork, or some blades set for the purpose, into strips as fine as ordinary straw, and dried in the shade, they make a very elastic stuffing. Where there are solid wooden backs, the stuffing can not be knotted, but broad-headed tacks must be driven through into the boards, to hold the stuffing in place. The covering may be such as the purse will allow, or some old dress of suitable material may be turned to account; for chamber use a covering of chintz will be suitable, but if the chairs are to occupy the living-room, some rep or similar material is preferable. The finish may be improved by the use of heavy cord around the edges, and a fringe or a frill around the seat and bottom. Faith Rochester, in the article referred to, finds it useful to have two or three small cushions or pillows for the corner chair, as by the aid of these the chair is converted into a capital day couch for the baby.

If any of our friends have devices for home-made chairs, preferable to these, they will help their sister housekeepers by sending descriptions of them.

Economy in the Use of Fuel.

Much money is wasted in the too rapid combustion of coal, especially when the heating apparatus is a furnace in the cellar. If this is left to the management of Patrick or Bridget, they will keep the fire-box full, and all the dampers open, with the grate-bars red hot below, and the thermometer among the eighties in the rooms above. This is too hot for health, injures doors and furniture, uses up the furnace, and wastes fuel. In running a furnace for the last three years, we have found "pea coal," which is the screened refuse of the coal yard, an excellent regulator of the heat, and a great saving in the coal bill. It is often thrown away in the coal yard, and when sold, can generally be had at half the price of furnace coal, or less. It contains as much carbon, as coal of larger size, and if the combustion is properly regulated, will go as far in heating a house. For all that is consumed there is a reduction of one-half in the cost. But it is of special service in the regulation of the combustion of the coarser coal in moderate weather, or during the night, when a lower temperature is desirable for the sleeping rooms. Ordinarily, a furnace need be visited but three times a day to keep up a comfortable warmth in the rooms above. Beginning in the morning at six o'clock, the ashes are well shaken down, fresh coarse coal is added, and a thin layer of pea coal on top of this. This process is repeated at mid-day, and at nine or ten in the evening, on retiring for the night. More of pea coal is added at the last visit, to check the combustion for the night. In the morning the whole mass of coal in the fire-box is completely ignited, and there is a good fire to begin with. More or less of the pea coal is used, according to the temperature of the weather. It is the best regulator of combustion we have ever tried, and saves from a quarter to a third in the expense of heating for the winter. This is an item worth looking after in these hard times. C.

BOYS & GIRLS' COLUMNS.

Boys and Girls—Look Here.—The publishers have a word especially for you on page 473. It is headed "A Paying Business for Boys, and Girls Too," and there are many boys and girls who will find it gives a useful hint. ☞ Turn to and read it.

Fun for a Holiday Party.

Of course fun that will answer for the holidays, will do for any other days, but as holiday week is given up to enjoyment, and there are more children's parties then than at any other time, some talk about them is in season. Those of you who have been to young folks' gatherings know that some are very pleasant, and that the time passes away all too quickly, while others are so dull, that you are glad when it is all over. When you think of it afterwards, you will find that a party was pleasant when the person giving it knew how to furnish amusement for *all*, and dull, when either no amusement was provided, or of a kind that all could not enjoy. It is better not only for young folks, but for old ones too, to not give a party at all, than to bring a lot of persons together, and leave them to amuse themselves. Persons who give parties take great pains to furnish refreshments, as if eating were the great object, and think of nothing beforehand that will amuse their friends. When a girl or

Fig. 1.—THE BEGINNING OF THE GIANTESS.

boy gives a party, let the first care be, not the cakes and apples, but the games and other entertainment. If you can not manage this yourself, most of you know some friend, no matter if older than yourself—who has a tact at keeping things lively, and before one game is "played out" is ready to propose and start another. It is well to consult such a friend, and if possible get his or her help. Games in which all can take a part are desirable, but if kept up constantly are fatiguing, and there should be now and then something which will amuse all while resting in their seats. Music comes in

Fig. 2.—THE GIANTESS FINISHED.

for such a purpose, but all can not have music, and there may be too much even of this. Of little tricks or feats in which one or two persons can amuse a whole company, we know of nothing more amusing than that of

"FINDING THE KEY-HOLE."

A little old woman enters the room and goes up to a door—the company having been arranged so as to give her a plenty of room—and begins to look for the key-

hole. Not finding it, she looks higher, and higher, stretching up gradually until her head nearly touches the ceiling, then she looks back again, shortening herself to her former size. At last she goes up full length, and apparently thinking that the key-hole may have dropped to the floor, she bends over to look, in the most comical position of all. The thing, when well managed, is so funny, that even those who know how it is done, can not fail to be amused. This was described, and three engravings

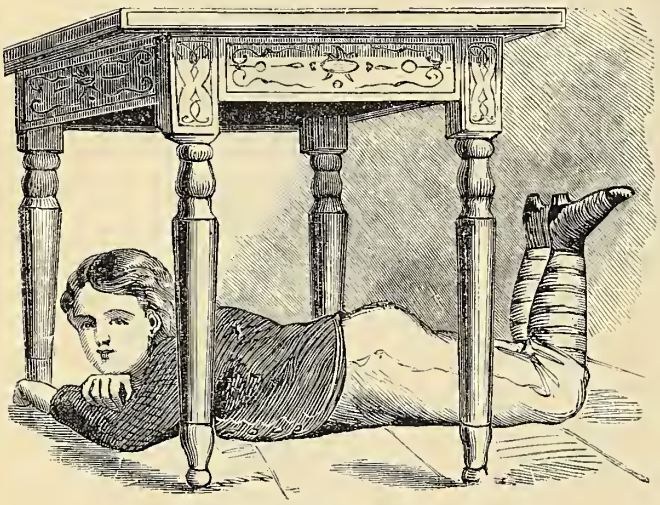


Fig. 3.—THE FRAMEWORK OF THE DOLL.

given in the *American Agriculturist* for March, 1872, but for those who can not refer to the back volume, we tell briefly how it is done. It needs two boys, one to be dressed and the other to dress him; an old skirt, a large shawl or cloak, an old sun-bonnet, a veil, and a broom. The skirt is put around the boy's neck and fastened there. The broom is then dressed by having the shawl or cloak well fastened to the brush part of the broom, the bonnet put over this, and the veil arranged to hide the broom. The boy then takes the broom handle under the skirt, the shawl or cloak hangs down well over it, and so arranges the clothing that he has a crack through which he can see his way. By holding the broom well down and stooping, he can make the woman very short, by gradually raising the broom, the old lady becomes tall. Recollect that the shawl or cloak upon the broom must be long enough to cover the boy's head when the broom is lifted as high as he can reach, as that hides the "machinery" of the trick.

Fig. 4.—THE DOLL FINISHED AND DRESSED.

In order that this may go off nicely, it should be practiced beforehand. The boy who assists in dressing should accompany her movements with an explanation—such as "This old lady has been to market—she is a little near-sighted, and always has trouble to find her key-hole. It must be higher up—higher—higher still"—and so on, making her movements agree with the talk. Another funny thing is the

INFANT GIANTESS.

This requires two boys, a girl or two, a tall stool, and some articles of women's dress. The show should be held in another room from that in which the company is assembled. If there are two parlors, all can be asked to step into one for a few minutes, and the doors be closed while the giantess is getting ready. The boy to play the part should be a round-faced youngster, and bright enough to play his part well. He is stood upon the stool as in figure 1, only the stool should be taller in proportion than shown there. He is then dressed by the girls in some grown person's skirts; large size may be managed by the proper use of pillows and newspapers; then the upper part requires an overskirt, or some such garment, so that when dressed the "giantess" will be a foot or more taller than a tall man, as in figure 2. Any ingenious girl can so arrange the dress as to conceal the trick. The clothing need not match, but the more ridiculous and showy it can be made, the better. Some kind of an odd head-dress, and a fan, the larger the better, will complete the outfit. If a show-bill is put up to amuse the company while the "giantess" is dressing, it will help, like: "The Wonderful Infant Giantess, from the Steppes of Russia, only six years old and as many feet high, understands English, but does not speak it," and such other Barnum-like nonsense as may be desirable. The second boy is to act as showman, to keep the spectators from coming too near. The sight of so small a face on so large a body is droll enough, and if the one who plays the part can use the face cleverly and "put on airs," it will be still more so. If the two boys can get up some kind of a jargon, and talk a "*risky-hitchky-owsky-humbug-ivitch*" kind of Russian, and the showman, pretend to put the questions and interpret the answers between the giantess and the company, a great deal of fun may be made. The exhibition may be brought to a most ridiculous end, by having some man take the giantess from the room by lifting the stool; if the boy can only stand steadily while this is done, it will be very laughable. There are many other amusing tricks managed in a similar manner, but we have room for only one more.

THE DUTCH OR CHINESE DOLL,

or the doll of any other nation, as you may fancy to dress her. The materials required for this are one boy, a piano or large table, a mask, home-made or otherwise, and a lot of outlandish or fancy clothing; besides there must be a boy to act as showman, and a girl or two to dress the doll. The boy who plays the doll should be one who has some patience, and has practiced the trick before. He lies at full length, face downward on the floor beneath the table or piano, with his feet turned up, as in figure 3. He should be made comfortable with rugs and pillows, else he will find it tiresome. Of course the preparations, as for the "giantess," must be made in another room. The feet are covered with any old cloth, to make a head to hold the mask, then the dress, which must have the sleeves, etc., stuffed, is attached, some kind of head-dress or cap arranged to hide the edges of the mask, and a hat of some kind must be securely put on. Any kind of toggery can be used, the more ridiculous the shape and colors, the better. The table or piano is then covered with shawls or table covers in such a manner as to hide the boy beneath, as in figure 4. He should practice beforehand to nod his feet, which are of course the doll's head, for yes, and to shake them for no. The company being admitted, the fun will then depend greatly upon the showman, who should introduce the doll as one of the most wonderful inventions of the century, in which mechanism has reached great perfection; the doll does not yet speak, but can answer yes and no to any questions that may be put, "and will tell fortunes quite equal to any living fortune-teller," etc. A wide-awake boy can make much sport by asking the doll questions about persons who wish to have their fortunes told—of course avoiding anything that can give offence. In order that the boy who plays the doll may know of whom the questions are asked, each person should be introduced to the doll who will make a low bow. A little forethought in preparing a few such tricks, and there need be no dull parties. But recollect that any of these tricks, if poorly done, are very stupid, and you must be careful to pick out the right boys or girls, and rehearse, or go through it all beforehand. The giantess and doll do not walk about; their dresses may be pinned in any way to produce the effect.

Aunt Sue's Puzzle-Box.

NUMERICAL ENIGMA.

I am composed of eleven letters:
My 11, 1, 7, 8, is a command to stop.
My 2, 5, 9, possesses.
My 10, 4, is a preposition.
My 1, 3, 4, 6, is a small spider.
My whole is the name of a poem written by Wm. Cullen Bryant. SKIPPER.

CONCEALED CAPES.

1. A circle around the moon foretells rain.
2. When rye is growing it resembles oats somewhat.
3. Mamma, your bonnet is untied.
4. Please get a towel and send Mary to me.
5. That is a good hop, every vine bears well.
6. I tore my dress on a thorn.
7. The length of ear shows the donkey. SUE K. SUDDS.

CROSS WORD.

My first is in man but not in boy,
My next is in game but not in toy,
My third is in Indian but not in chief,
My fourth is in branch but not in leaf,
My fifth is in writing but not in pen,
My sixth is in Edward but not in Ben,
My whole is a city far away,
Of which we hear nearly every day. SNIPPY.

SQUARE WORD.

1. A Turkish coin. 2. To delay. 3. Goddesses presiding over cattle. 4. The consequence of anything. 5. Intermissions. XERYION.

ANAGRAMS.

1. Sam, gaze in.
2. Men range arts.
3. Gin end rag.
4. O I can mop sin?
5. You seal J.
6. Bar Sim's bar.
7. Gin burn me.
8. You pint port.
9. Cut vail rots.
10. Ten firemen.

J. ADAMS.

TRANSPOSITIONS.

(Fill the blanks in each sentence with one word transposed.)

1. These —— are a perfect ——, you are sure to —— upon some of them.
2. Will you ask your —— to let his —— —— carry this —— to Tom's house?
3. Don't put your —— through the bars, the —— may —— it.
4. After cooking the —— I went out to —— in the little stream in the ——.
5. —— was —— to carry the ——, although he had a —— on his arm.
6. My —— lasted but a short ——; then I went to scour the ——.
7. —— —— that I have —— this, fairly.

BESSIE BENNETT.

FLOWERS AND VEGETABLES.

(The syllables not always described in their original order. *e. g.* "a preposition, an adverb, and a familiar name."—"Tomato.")

1. An old wine and an evergreen tree. 2. Those from the same race and a water engine. 3. A girl's name and a metal. 4. An article of food and a relative. 5. Two adverbs and a pronoun. 6. A painful excrescence. 7. Half of a certain bird and a vehicle. 8. Two articles generally seen on the tea-table. SPHINX.

PI.

Thaw sourdown file si hist I dale?
Pire palsep prod tobau ym hade;
Het eulussio seulster fo eth nive
Poun ym thoum od churs herit newi;
Het tencaneri nad rouscui cheap
Tino ym dansh melhesvest chear. C. A. SPROAT.

DOUBLE ACROSTIC.

The initials name one tree, and the finals another.

1. A vestibule. 2. A Canadian city. 3. An account-book. 4. A flower. 5. A young person. ITALIAN BOY.

ANSWERS TO PUZZLES IN THE OCTOBER NUMBER.

NUMERICAL ENIGMA.—Baltimore.

PIES.—1. Gratitude is the fairest blossom which springs from the soul, and the heart of man knoweth none more fragrant. While its opponent, ingratitude, is a deadly weed, not only poisoning in itself, but impregnating the very atmosphere in which it grows with fetid vapors. 2. There is no royal road to learning.

WORD PUZZLE—ACROSTIC.
Jordan, Naaman.
J—ohn—N
O—she—A
R—hod—A
D—iblai—M
A—ban—A
N—atha—N

SQUARE WORD.
IBIS
BORE
IRON
SEND

DIAMOND PUZZLE.
Connecticut.
C
LOT
CANOE
GRANDEE
AUTHENTIC
CONNECTICUT
BREATHITT
MADISON
DECRY
PUT
T

DECAPITATIONS.—1. Fox, ox. 2. Flute, lute. 3. Fowl, owl. 4. Goat, oat. 5. Bark, ark. 6. Block, lock. 7. Bale, ale. 8. Spain, pain

CONCEALED BIRDS, ANIMALS, FISH AND FRUIT.—1. Shad. 2. Wren. 3. Lark. 4. Dog. 5. Apple. 6. Trout. 7. Pear. 8. Cantelope, antelope. 9. Condor. 10. Cat. 11. Orange. 12. Lime.

DROP-LETTER PUZZLE.—

Soft ring the bells in the evening air,
Calling the resting land to prayer;
The mist bends down to the river's flow,
And along the sky a dying glow—
Thus e'en life's day lies down in the West,
When the bells shall ring us forever to rest.

ANSWER TO FRANK NICHOL'S PUZZLE PICTURE, NO. 457.—1. Stop—post. 2. Sear—ears. 3. Settler—letters. 4. Café—face. 5. Nape—pane. 6. Flea—leaf (of table). 7. Ills—sill (of window). 8. Top—pot (on range). 9. Words—sword. 10. Ones—nose. 11. Pace—cape. 12. Sloop—spool (by eat). 13. Odor—door (of range). 14. Save—vase. 15. Petal—plate. 16. Gnu—gun. 17. Act—cat. 18. Blow—bowl. 19. Sing—sign. 20. Mars—arms. 21. Palm—lamp. 22. Anger—range. 23. Hose—shoe. 24. Bleat—table. 25. Tools-stool.

Thanks for letters, puzzles, answers, etc., to J. F. Secor, Fannie M. S., Alba, Theo., Pinkie, Nellie K., Jennie & Susie, Martha J. W., Charlie, Ricardo, and N. D. D.

Aunt Sue's Chats.

MINNIE F.—Why should you be troubling your little head about "Mason and Dixon's line"? Charles Mason and Jeremiah Dixon were the names of the two English surveyors employed between 1763 and 1767 to run the southern boundary line between the free State of Pennsylvania and the then slave States of Delaware and Virginia. John Randolph, in the heated debate in Congress in 1829, about excluding slavery from Missouri, made use of the phrase "Mason and Dixon's line" so often, that it became current in all the newspapers, and hence in common conversation.

C. M. D.—I can "give you a recipe for taking out mildew," but I get it from the books and not from experience. So if some one will try it and let us know how it works, I shall be glad. "Soap the stains and rub them well. Then scrape some fine chalk and rub that into the linen. Next lay the stained article on the grass, and, as it dries, wet the spot a little. Repeat this operation, and the mildew will disappear." (See page 105 of the March *American Agriculturist* for further directions as to stains.)

EMILY W. S.—"THE VATICAN" is the regular palace and residence, at Rome, of the Popes. It was begun in the sixth century by the Bishop of Rome. In the 12th century Pope Eugenius added some magnificent buildings to it. In the 16th century it was again enlarged, and the Popes, one after the other, have added to it, until now it is a *collection* of buildings, covering a space 1,200 feet in length and 1,000 feet in breadth. The buildings are filled with statues, paintings, medals, and antiquities of almost every description. More than 70,000 ancient statues that have been dug up are now there.

THE PASSENGERS BY THE MAY FLOWER.—Sometime ago one of my young friends asked for a list of the persons who sailed in the May Flower, and landed at Plymouth, Mass., Dec. 11th, 1620. I was at some trouble to find the record and make out the list, but the editors, who have their own notions about such matters, did not think it would be of interest to boys and girls generally, and thought I had better send the names to the one who asked for them. If the boy or girl, I have now forgotten which it was, who asked for the list, will drop a note to the Editor of the *American Agriculturist*, 245 Broadway, New York, he will forward it.

The Doctor's Talks—About Plants and Seeds that Move.

It is several years since I told the boys and girls about the Sensitive-plant, which a man was selling on the city streets, calling out "Here they are, all alive." We know that all plants are alive, but few are quite so lively as this Sensitive-plant, which shuts up and droops its leaves suddenly when touched. I also a long while ago told you about climbing plants, such as Beans and Morning-glories, and said that if you watched them carefully, you could see that they very slowly went sweeping around, as if trying to get hold of something upon which to climb. There are many other ways in which plants show movements, some made by the plant itself, and others due to something besides the plant. At present I wish to tell you of two cases in which parts of a plant show life-like motions, which depend upon something besides the plant itself. One of these is a kind of oat, which, when a youngster, I used to cultivate in my little garden for the fun it made among my play-fellows. It is called the

ANIMATED OAT,

and is occasionally now grown in gardens as a curiosity. It is much like a common oat, though larger; but I don't suppose you ever examined a common oat very closely, so I give you in figure 2 a picture of this of the life size. There are usually two grains, or oats, wrapped up in a very hairy chaff, and these are placed inside of two other pieces of long-pointed chaff, the outermost parts that you see in the engraving. The chaff that is around the grain in the common oat, is a little hairy, but not heavy bearded like this, and has a small bristle attached to it, but here the bristle is very large, bent at about half its length, with the lower half twisted. If you pull away the outer chaff so as to leave the two grains, they look much like a hairy long-legged insect. Dip this "insect" into water and lay it on the table and watch it. It at once behaves as if it were alive, the legs (or bristles) move in various ways, mixing themselves up and untangling them, all the while throwing the thing about, often with a jump of several inches. You cannot imagine anything more life-like and comical. You will wonder what makes this motion. If you watch, you will see that the bristles twist and untwist, as they are moist or dry; you know that moisture makes a rope twist hard, and that it will untwist so much when dry as to be slack.

Fig. 1. ANIMATED OATS. Fig. 2.

You know that hair will not curl well in damp weather, and many other things are affected by moisture. It is the untwisting and twisting again of the lower part of these bristles that throws the bent portion around, and causes all the movements. By fastening some little artificial wings of paper or other material, to the oats, as in figure 1, the resemblance to an insect is still greater. The seed stores sell these oats, but the bristles are usually much broken in packing, and by sowing these you can raise very perfect ones. It is very easy to see that the motion is of great use to the plant in distributing the seeds. It is very interesting to notice the various ways provided for the scattering of seeds; some are taken by the wind, others are shot off by the bursting of the pod, and others have hooks by which they hold fast to the legs of animals, and are carried a long distance; but this oat has to travel without such help. When the grain falls, the first rain sets the bristles in motion, and when dry weather comes they begin to twist again; so they go on moving with every change of moisture and dryness, and in time the seeds travel quite a distance from the place where they grew....I suppose some of you have seen a notice in the papers about the

CALIFORNIAN "JUMPING SEEDS."

Generally the newspaper accounts of such things are far from correct, and I was curious to see what kind of a seed it could be, about which such stories were told. Quite unexpectedly a young friend, who is fond of collecting seeds of all kinds, brought me one of the jumpers that had been given him by a lady from California. Instead of being a *seed*, it is, properly speaking, a part of a *seed-vessel*, or capsule, and of the size and shape shown in the engravings, figs. 3 and 4; it is somewhat three-sided; the part uppermost in figure 4 shows where it was joined to two other portions, just like this, to make what botanists call a three-celled capsule. The name of the shrub that produces it is not yet known, but it is evidently a relative of the Castor-oil plant. It is found in the southern-most part of California, and in Northern Mexico, and they are known in California as the "Mexican Jumping Seeds." Laid upon a smooth surface, or upon the hand, this seed (which we will call it) starts off, going along by little jerks, and soon moves several inches in a most surprising manner. While examined ever so closely, there is nothing to be seen to cause the motion. "Why not cut it open?" you will say.—That is what I should have done, had not my friend, Prof. Riley, of St. Louis, already done so with some. He found inside a small white "worm," or caterpillar, very much like the common apple-worm. "How did it get there?"—The parent moth laid the egg in the flower, or when the pod was young and tender, and when the egg hatched, the little worm from it gnawed its way into the young pod, and fed upon the growing seeds it found there. The pod went on ripening, the small hole the worm made in going in having closed up. When the *larva*, which is the proper name for an insect in this caterpillar or "worm" stage, gets full grown, and has eaten up all but the shell of the pod, it spins a silken web with which it lines its prison. Most larvæ, when they get their growth, go to rest as pupas, and in time come out as the perfect insect; this fellow is of a more active kind, and before going to rest, spends some weeks, or even months, after it is grown up, in traveling. The pod falls from the bush, breaking into its three parts, and those containing worms start off on a journey. According to Mr. Riley, the insect holds fast to the web with its hind legs, draws itself back, and buts the wall of its prison with its head, which sends it along with a jerk. When the pod is held in the hand, these blows can be very distinctly felt. It is a very curious affair altogether; it is not easy to see what the larva gains by traveling, as when it comes out as a moth it can go much further and faster on the wing than it can now by butting its way along. There is no doubt a good reason for this, and some day it may be found out. The seed-pod that my young friend gave me has been away from the bush for over two months, but as I write it is having a regular "circus" by going around and around on the bottom of a little bottle which stands on my table.

Fig. 3. Fig. 4.
JUMPING SEEDS.

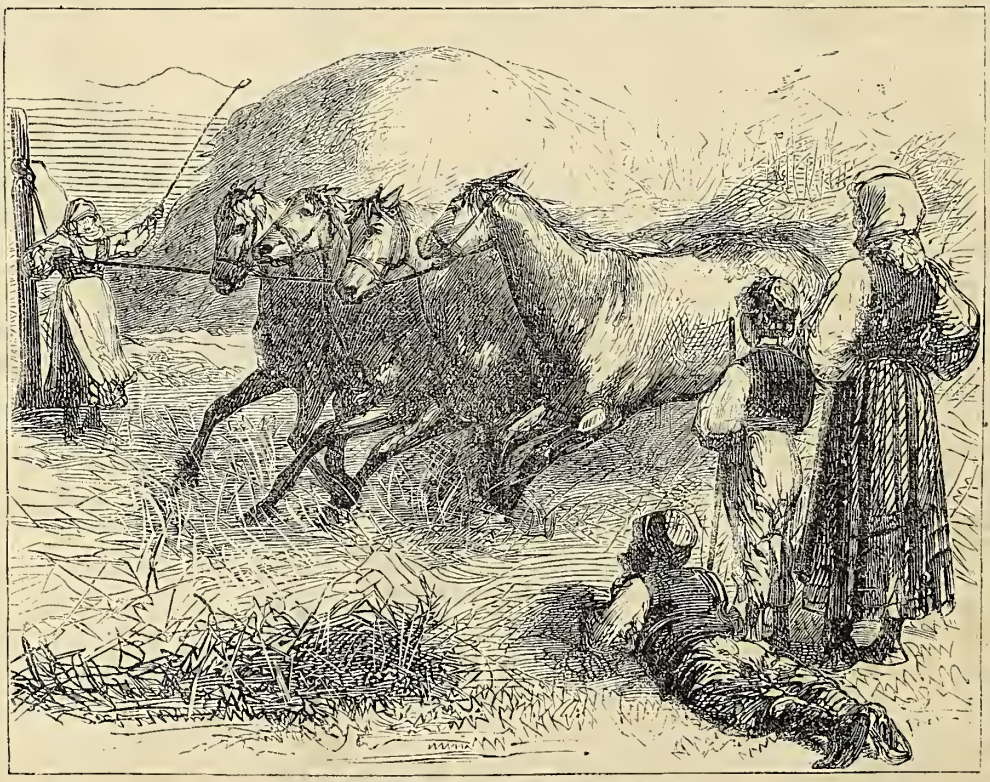
Making Friends with the Birds.

Snow, birds, children, and their mother are in the picture, given on the next page—yes, there is something more—the little evergreen tree. No doubt that was the Christmas tree that had given the children much pleasure, and after it had borne its fruit of love-ripened gifts, it was put out in the same loving spirit, in the hope that it might please the little birds. The birds in winter, poor things! what a hard time they must have when a heavy snow covers everything! In some winters thousands of them starve because all their food is covered by the snow. At such times some crumbs, or a few seeds, may save the life of a little bird. When the deep snows come, think of the birds and how hungry they may be. There are few families in which a little can not be spared to feed them. It will be a good act, and like other good acts, will bring its own reward, for you will be abundantly paid for your trouble, in seeing how regularly the birds will come for their food, and in watching their pleasing ways. Our winter birds are not much at singing, but they will do the best they can by their chirp and twitter to tell you that they are very thankful. No doubt if we could understand what they say in their bird talk, it would be something like this.—"Thank you big birds—we don't know what kind of birds you are, you have two legs, but don't eat with your beak, and have no feathers. You look like good birds, and though your eyes are bigger than owl's eyes, and your claws are larger than hawk's claws, yet you feed us, and we think you are good. We shall come again to-morrow, and if you wish to make friends with us let us come towards you, but don't you try to touch us, because we can't bear to be handled. Feed us, and let us alone, and you will "*see-e-e-weedlum-ee. Chip-chip, gargoogle*—good by. *Weedlum, seedlum, zip!*"—If the birds don't say this, they act it. By keeping quiet, and not trying to be too familiar, the birds will soon find out that you are their friends. We know a lady who is on such good terms with the birds, that in summer-time she will go out, and call them to her. In winter it is a much easier matter, as the birds are hungry, and that makes them very tame. The picture gives you an idea of the best way of making friends with the birds in winter. A balcony, or the roof of a porch just under an upper window, is one of the best places for feeding them; it is above the reach of cats, and they feel safer than they do lower down. Still, if no such place is handy, you had better feed them on the ground around the kitchen door, than not at all. After every snow, whether on the ground or above, sweep a place clear, before the snow gets hard and icy. Then every morning, at the same hour, throw out your crumbs and seeds, and mind, do not forget to always have water there in something that will allow the birds to get at it easily. Recollect that the bird must stand where it can reach the water, so do not tantalize the poor things, by putting it where they can see it, but not get it. If you don't know how to manage this, ask father, or an older brother or sister to help. It is said by those who know that, in severe winters, when the streams all freeze up, birds die as much from thirst, as they do do from hunger. See that your water is not ice; thin ice may be broken, but it will be best to take in the water-dish every night. The birds, so long as they can find plenty of food, will not come very near the house, but after a heavy snow, the little things seem to know where they will find help, and come around as if they expected us to take care of them. Don't let them be disappointed. They may be a little shy when they first see you, but if you keep still until they learn that you will not hurt them, and do not make any sudden motions to startle them, you can soon get on very pleasant terms with the Snowbirds, Chickadees, and other winter visitors.

How Things are Done in Other Countries—Thrashing Out Grain.

Last month, in describing the "Milkman in Malta," we mentioned that one of the most interesting things (to us) about traveling is to observe the ways people do their daily work, and in seeing how those who live in other countries do things that we do very differently at home. Of course, in most of these operations the end to be gained is the same, but there are many ways of reaching that end, and those followed by people elsewhere are often better for them than our ways would be, while at the same time we could not adopt their plan of doing things if we wished to do so. Take the Milkman in Malta, for example; it would be almost impossible to serve the people in one of our large towns with milk if a flock of goats had to be driven around to be milked at the houses. But goats can be kept around Malta, while it is very difficult to keep cows. So the people there do the best they can. We cannot all travel and see these things, but we can do what is next best, we can make other countries and their customs come to us in pictures, and learn much in that way. Thinking that the boys and girls will like it and will find it interesting, we propose to give a series of articles and engravings, showing how things are done in other countries. We may not do this every month, but by keeping these articles running along, we shall in time have learned much that it is well to know. It is not necessary to tell our boys and girls how important bread is—some of you may add: "Yes, and butter, too," but all people do not have butter with their bread, and we will attend first to the bread, and see how other people manage to get that. It is a very rude people who do not raise some kind of grain to make bread from; it is not always wheat, but that grain is raised in many countries where all the steps of preparing it, until it finally gets to be bread, are of the rudest kind. You know that after the wheat is ripe and harvested, the next thing is to separate the grain from the straw and to get it out of the husks that are around it in the head. This operation, you are aware, is thrashing. All of you, who live in parts of the country where wheat is grown, know what quick and lively work the thrashing machine makes, with its eight or more horses, or a steam-engine; how hard the men have to work to keep its hungry jaws supplied with sheaves of wheat; how the straw runs out in a great stream as fast as a man or two can shape it into stacks; how at another place the grain runs out in another stream, and bag after bag is carried off to the granary, and how it all goes with a buzz, and a hum, making a noise that can be heard for a mile, and this with the shouts of the drivers make the whole neighborhood ring with the music of the harvest. This is our way of starting the grain on its way to the loaf of bread. But it is likely that most of your fathers and mothers can recollect when there were no thrashing machines, and that the grain was all beaten out upon the barn-floor by the flail. In some very new parts of the country, or where but little grain is grown, the flail is still used. Those who have never seen one will understand what it is like, if we describe it as a whip, of which the *lash* as well as the handle is made of wood; indeed, the original flail was a whip with two or more lashes. To use the flail so that the lash part will strike a smart flat blow upon the heads of grain needs some skill, as an awkward beginner may hit his own head instead of the grain-heads. The first thrashing machines in England were made with beaters, to act like several flails together, but it was not until American inventors took hold of it, that the machine reached its present usefulness. "But before the flail—what then?" You have read in the Scriptures, as one of the laws given by Moses, "Thou shalt not muzzle the ox when he treadeth out the corn;" and this, if we had no other account of it, would show us how thrashing was done in those days of old, for you must know that where corn is mentioned in the Bible it does not mean Indian corn, but wheat or barley, and these are still called corn in England, where our corn is scarcely known. The ancient people made a thrashing-floor by pounding the surface of a clayey place until it became smooth and hard; the bundles of grain being laid upon this floor, oxen were driven around and around, until they had trampled the kernels out of the heads. It was the custom to muzzle the oxen, to prevent them from eating, but Moses evidently thought that was not fair, and that the poor animals should have a bite to pay them for their labor. In other Eastern countries horses were used instead of oxen to trample out the grain. "What strange people those ancients were, and what odd old ways they had," some of you will say. In many Eastern countries the people live just as they did in the time of Moses. While other parts of the world have gone on improving, these portions remain as they were; no buzz of the thrashing machine is heard; not even the thud of the flail, but instead the yells of the drivers as they urge the oxen around and around, as in Moses' time. Just now you read in the papers the accounts of the wicked war between the Turks and the Servians and others, and perhaps you have read that the Turks have received so many thousand of some improved rifle from America, and that the Servians have had other thousands of other improved rifles from England or Germany. Fast enough these people are to seek out improved implements for killing people; yet the very armies that are to use these new rifles "with all the modern improvements" are fed upon grain thrashed just as it was thousands of years ago, before gunpowder and rifles were known. Our engraving, from a sketch by one of the artists at the seat of war, shows how the wheat is thrashed for the Servian army. You may think it strange that people do not improve in thousands of years, but we need not go off of our own continent, to find that they do not. Our next neighbors, the Mexicans, thrash their grain in just the same way that the Israelites did, and we have many a time seen the oxen and horses tramping around the earthen thrashing-floor, just as they did in the far East long before our present era. In some parts of Mexico, where horses and oxen are scarce, even goats or sheep are made to answer the purpose. Having shown you how some other people get their grain, we will follow it to the next step towards bread another time.

MAKING FRIENDS WITH THE BIRDS.—(*See page* 467.)



THRASHING GRAIN FOR THE SERVIAN ARMY.

The Last.—This is the very end of our Boys and Girls' Columns for the year 1876. By the time this reaches you, we shall be providing for your amusement and instruction for 1877. We do not say "good-bye," because we expect our friends to keep with us. So we only pause long enough to give the greeting of "A Merry Christmas and A Happy New Year" to all our young friends.

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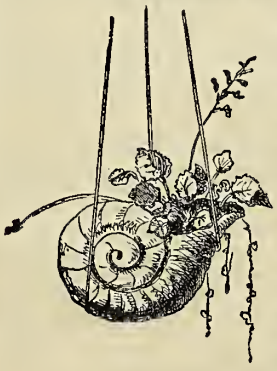

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It gives a full and instructive account of the management of poultry in large numbers, with plenty of excellent illustrations.—*Christian Register*, Boston.

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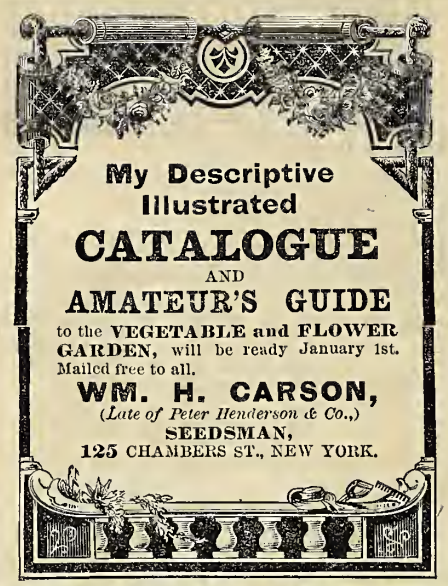

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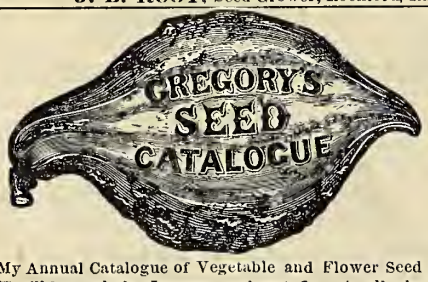

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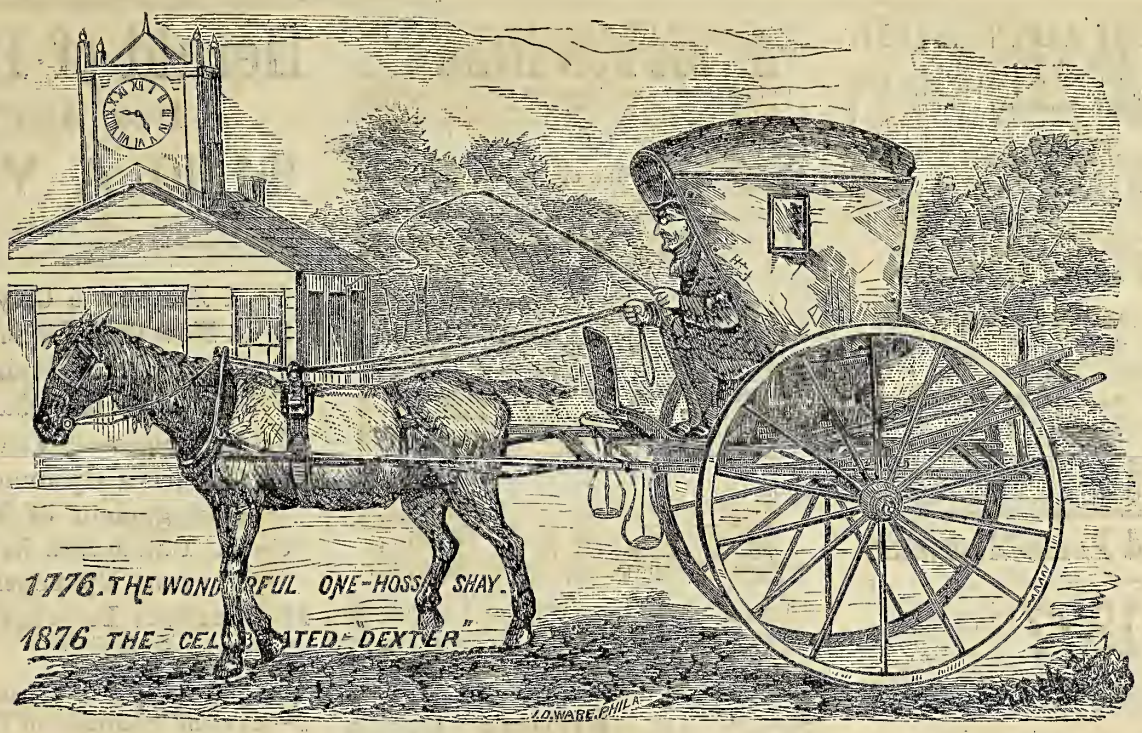

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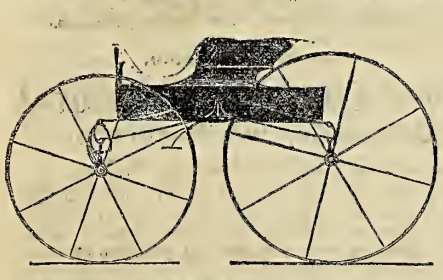

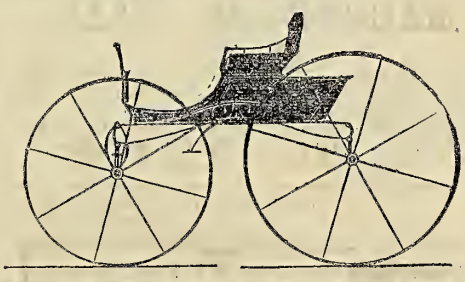

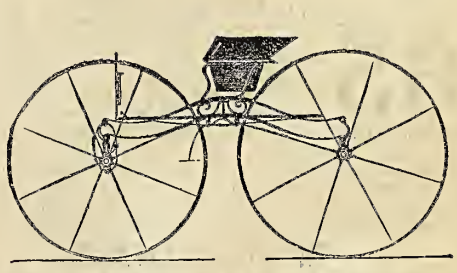

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GOOD THINGS

In our Premium List.

The Publishers of the *American Agriculturist* take pleasure in presenting their new general Premium List for 1877. The Premiums which they have offered in past years have engaged the attention of a very large number of persons of all ages and both sexes. Many thousands have secured Premiums, and very many of these, who at first had small hopes of success, have been themselves astonished at the ease with which they have raised large clubs and secured one or more of the valuable articles here offered.

[*Read the Table of Premiums in next column and the notes below it.*]

Explanatory Notes.

N. B.

Read and carefully Note the following Items: The next Table tells the *name* and *cash price* of each article, and, (in the last column but one), gives the number of names sent in at the regular price of $1.60 a year that will secure any premium article. (The last column gives the number of names at the lowest club price for 20 or more names, that is $1.10 each. Some persons quickly raise large clubs by taking all the names at $1.10 each, and themselves pay the difference, 50 cents each, and even thus get the premium articles very cheaply.) (*a*) All subscribers sent by one person count, though from several different Post-offices. But....(*b*) Tell us with each name or list of names sent, that it is for a premium....(*c*) *Send the names as fast as obtained*, that the subscribers may begin to receive the paper at once. You can have any time you wish up to next July, to complete your list....(*d*) Send the exact money with each list of names, so that there may be no confusion of money accounts....(*e*) Old and new subscribers all count in premium clubs, but a portion, at least, should be new names; it is partly to get these that we offer premiums to canvassers....(*f*) Specimen Numbers, etc., will be supplied free, as *needed* by canvassers, (when 3 cents per copy is furnished to pre-pay postage), but they should be used carefully and economically, and where they will *tell*....(*g*) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at *our* risk; otherwise it is not.

Table of Premiums.

[In the following table is given the price of each article, and the number of subscribers required to get it *free*, at the regular rates of $1.60 a year, and also at the club rates of $1.10 a year, postage included, which is prepaid in all cases *by the Publishers*.]

TABLE of Premiums and Terms

For Volume 36—(1877).

Open to all—No Competition.

No.	Names of Premium Articles.	Price of Premiums.	Number of Subscribers required at $1.60	or at 1.10
1	*Pat. Magic Bellhead Pencil (Ludden & Taylor)*	$ 1 50	4	....
2	*Ladies' Magic Charm Pencil (do. do.)*	$ 2 00	5	20
3	*Gents' Magic Charm Pencil (do. do.)*	$ 3 00	8	30
4	*Gold Pen, Telescopic Case (do. do.)*	$ 2 50	7	27
5	*Gold Pen and Pencil, Telescopic Case, Elegant (do. do.)*	$ 5 50	13	37
6	*Centennial Magic Pencil (do. do.)*	$ 3 00	8	30
7	*Patent Telescopic Gold Pen and Pencil (do. do.)*	$ 6 50	15	45
8	*Knives and Forks (Patterson Bros.)*	$14 75	22	73
9	*Knives and Forks (do. do.)*	$18 50	28	95
10	*Carver and Fork (do. do.)*	$ 3 75	9	32
11	*French Cook's Knife, Fork, and Steel*	$ 3 75	9	32
12	*Pocket Knife (Meriden Cutlery Co.)*	$ 1 50	4	....
13	*Pocket Knife (do. do.)*	$ 2 00	6	22
14	*Pocket Knife (do. do.)*	$ 2 75	7	27
15	*Ladies' Pocket Knife (do. do.)*	$ 2 00	6	22
16	*Multum in Parvo Knife (do. do.)*	$ 3 50	8	30
17	*Boy's Wagon (C. W. F. Dare)*	$ 5 00	12	37
18	*Patent 4-wheeled Propeller Velocipede, (C. W. F. Dare.)*	$ 8 00	16	52
19	*Crandall's* **John Gilpin**	$ 1 00	3	....
20	*Crandall's Masquerade Blocks*	$ 1 00	3	....
21	*Crandall's* **Acrobats**	$ 1 00	3	....
22	*Crandall's Building Blocks*	$ 2 00	5	20
23	*Crandall's* **Menagerie**	$ 2 00	5	20
24	*Case of Scissors (U.S. Steel Shear Co.)*	$ 4 00	10	34
25	*Terrestrial Globe [Schedler's] (Steiger)*	$ 3 00	8	30
26	*Combination Ten-pin Alley (Horsman)*	$ 2 50	7	27
27	*Pair of Skates (Patterson Bros.)*	$ 3 50	8	30
28	*Doll's Cottage Chamber Set (Dare)*	$ 4 00	9	32
29	*Child's Self-operating Swing (do. do.)*	$ 4 00	9	32
30	*Improved Table Croquet (Horsman)*	$ 3 00	8	30
31	*Utility Adj. Table (Lamble & Sargent)*	$ 8 00	16	52
32	*Boudoir Clock (S. B. Jerome & Co.)*	$ 3 50	8	30
33	*Houchin's Improved Patent Pocket Cook Stove*	$ 1 50	4	....
34	*Self-adjusting Gold-plate Watch Key, (J. S. Birch.)*	$ 1 00	3	....
35	*Pocket Tool Holder (Miller's Falls Co.)*	$ 1 00	3	....
36	*Piano, Splendid 7-oct. (Steinway & So's)*	$650 00	625	1630
37	*Tea Set (Lucius Hart Man'fact'g Co.)*	$50 00	66	225
38	*Ice Pitcher (do. do. do.)*	$16 00	24	80
39	*Castors (do. do. do.)*	$ 9 00	17	54
40	*Cake Basket (do. do. do.)*	$12 00	19	65
41	*Revolving Butter Cooler (do. do.)*	$ 8 00	16	52
42	*One Dozen Teaspoons (do. do.)*	$ 6 00	15	45
43	*One Dozen Tablespoons (do. do.)*	$12 00	19	65
44	*One Dozen Table Forks (do. do.)*	$12 00	19	65
45	*Child's Cup (do. do.)*	$ 2 75	7	27
46	*Child's Knife, Fork & Spoon (do.)*	$ 5 00	12	37
47	*W. S. Blunt's "Universal Force Pump"*	$12 00	19	65
48	*Moore's Floral Set (Moore Man'f'g Co)*	$ 1 00	3	....
49	*Cahoon's Broadcast Seed-sower*	$ 5 00	12	37
50	*Bracket Saw (Millers' Falls Man'f Co.)*	$ 1 25	4	....
51	*Payson's Indelible Ink—Pen, etc.*	75	3	....
52	*Excelsior Pocket Microscope (Bausch & Lomb Optical Co.)*	$ 2 75	7	27
53	*Abbott Pocket Microscope (L. G. Abbott)*	$ 1 50	4	....
54	*Silver Watch (American Watch Co.)*	$30 00	44	144
55	*Garden Seeds & Flower Bulbs (select'n)*	$ 2 00	6	22
56	*Planet Jr. Combined Drill & Hoe (S. L. Allen & Co.)*	$15 00	22	75
57	*Breech-loading Pocket Rifle (Stevens)*	$16 00	24	80
58	*Sporting & Hunting Rifle (Remington)*	$32 00	48	156
59	*Double Barreled Breech-loading Gun (E. Remington & Sons)*	$50 00	66	225
60	*Creedmoor Long Range Rifle (E. Remington & Sons)*	$100 00	110	330
61	*Turn-table Apple Parer (Goodell Co.)*	$ 1 00	3	....
62	*Climax Apple Corer & Slicer (do.)*	$ 1 00	3	....
63	*Family Cherry Stoner (do.)*	$ 1 00	3	....
64	*Bay State Apple Paring and Slicing Machine (Goodell Co.)*	$ 1 50	4	....
65	*Sewing Machine (Remington)*	$70 00	80	228
66	*Reid's Patent Butter Worker*	$10 00	18	58
67	*Family Scales (Fairbanks & Co.)*	$14 00	21	70
68	*Washing Machine (Doty's)*	$14 00	21	70
69	*Clothes Wringer (Best—Universal)*	$ 8 00	16	52
70	*Worcester's Great Illust'ed Dictionary*	$10 00	18	58
71	*Any back Volume Agriculturist* (Unbound. Post-paid.)	$ 1 75	....	20
72	*Any Two Back Volumes do.* (Unbound. Post-paid.)	$ 3 50	....	29
73	*Any Three do. do. do.* (Unbound. Post-paid.)	$ 5 25	13	37
74	*Any Four do. do. do.* (Unbound. Post-paid.)	$ 7 00	15	47
75	*Any Five do. do. do.* (Unbound. Post-paid.)	$ 8 75	17	54
76	*Any Six do. do. do.* (Unbound. Post-paid.)	$10 50	19	61
77	*Any Seven do. do. do.* (Unbound. Post-paid.)	$12 25	21	68
78	*Any Eight do. do. do.* (Unbound. Post-paid.)	$14 00	23	74
	—(*Each add'l Vol. at same rate.*) (Unbound. Post-paid.)	....	....	....
79	*Twenty Vols. XVI to XXXV.* (Unbound. Post-paid.)	$35 00	47	162
80	*Any Back Vol. Agriculturist* (Bound. Post-p'd.)	$ 2 50	....	24
81	*Any Two Back Volumes do.* (Bound. Post-p'd.)	$ 5 00	....	36
82	*Any Three do. do. do.* (Bound. Post-p'd.)	$ 7 50	16	48
83	*Any Four do. do. do.* (Bound. Post-p'd.)	$10 00	18	60
84	*Any Five do. do. do.* (Bound. Post-p'd.)	$12 50	21	71
85	*Any Six do. do. do.* (Bound. Post-p'd.)	$15 00	24	82
86	*Any Seven do. do. do.* (Bound. Post-p'd.)	$17 50	27	92
87	*Any Eight do. do. do.* (Bound. Post-p'd.)	$20 00	30	102
	—(*Each ad'l volume at same rate*) (Bound. Post-p'd.)	....	....	....
88	*Twenty Vols. XVI to XXXV.* (Bound. Post-p'd.)	$50 00	68	220
89	*A* **$10** *Library (Your Choice.)* (All sent paid through, by Mail or Express.)	$10 00	18	58
90	*A* **$15** *Library do.* (All sent paid through, by Mail or Express.)	$15 00	24	85
91	*A* **$20** *Library do.* (All sent paid through, by Mail or Express.)	$20 00	31	106
92	*A* **$25** *Library do.* (All sent paid through, by Mail or Express.)	$25 00	38	125
93	*A* **$30** *Library do.* (All sent paid through, by Mail or Express.)	$30 00	44	144
94	*A* **$35** *Library do.* (All sent paid through, by Mail or Express.)	$35 00	50	162
95	*A* **$40** *Library do.* (All sent paid through, by Mail or Express.)	$40 00	56	177
96	*A* **$45** *Library do.* (All sent paid through, by Mail or Express.)	$45 00	62	192
97	*A* **$50** *Library do.* (All sent paid through, by Mail or Express.)	$50 00	68	207
98	*A* **$60** *Library do.* (All sent paid through, by Mail or Express.)	$60 00	80	237
99	*A* **$75** *Library do.* (All sent paid through, by Mail or Express.)	$75 00	100	282
100	*A* **$100** *Library do.* (All sent paid through, by Mail or Express.)	100 00	125	360
101	*A Choice of Good Books. (See Description.)*	....	....	....

☞ *Every Premium article is* **new** *and of the very* **best** *manufacture. No charge is made for packing or boxing any article in our Premium List. The Premiums,* **Nos. 1 to 7, 12 to 16, 19 to 22, 24, 32 to 35, 50 to 53, 55, 71 to 101,** *inclusive, will each be delivered* **FREE** *of all charges, by mail or express (at the Post-office or express office nearest the recipient) to any place in the United States or Territories.—The other articles cost the recipient only the freight after leaving the manufactory of each, by any conveyance desired. An* **Illustrated Descriptive Premium List** *sent* **free** *to applicants.*

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 449.

A Paying Business for Boys, and Girls Too.

All grown up people like to get hold of a business that will *pay*, that is, if it is respectable and honest—*some*, we are sorry to say, don't look so much after the last named two items, if they think the *paying* part is pretty certain. Young people as well as older ones like good business. Now we have a business that does pay, in two ways, and it is honorable and useful to others also, and it is one that a great many of our young readers have gone into quite successfully during twenty years past.—Did you see that beautiful "Premium Supplement" sent out in the October *American Agriculturist*? If not, send to us right off and get one free of cost, except the 1-cent postal card to write the request and your address on.—On that sheet are pictures of a great many things that every Boy and Girl would like to get, if it could be afforded. Well, Ten Thousand Boys and Girls can each get one or more of those fine things this month, without spending money. Here is how to do it: You can take a copy of the *American Agriculturist*, and show it to the people in your neighborhood and town, and tell them all about its pictures, its useful reading, its size and beauty, etc. Then ask them to let you get it for them for the year 1877. Tell them it will only cost the price of 2 or 3 eggs a week, or half-a-cent a day. You can think of a great many ways that even a poor or economical family can manage to pay for it. Such talk will be a capital exercise of your tact and persuasion, and be the best possible discipline and business *experience*, just the thing that will help you in many ways when you grow up. By persistence you can thus easily persuade three, four, five, or even more people to take the paper, and we (editors) promise to make the paper so good and useful that they will get many times the worth of their subscription during the next year. Then when you get what names you can, look down the table, on page 2 of the premium sheet, and find which article you want most for the number of names you have sent, and the Publishers will PRESENT it to you. Multitudes of boys and a good many girls have done this and obtained many fine things free, at the same time learning business methods, learning to help themselves, getting what they could not otherwise obtain without begging father to buy it, and they have scattered many copies of this paper where it has done good. Try it this month and next, *beginning at once*. Don't be discouraged if you don't succeed right away, but keep at it, determined to succeed any way, and get what you started for. Most people will listen to the argument and requests of boys and girls, modestly and courteously presented, who would turn older people away. Aside from the things they get, we encourage *our* children to get up premium lists for good periodicals, just for the experience it gives them. Mr. Judd has often said that canvassing for newspapers, when a student, did more than anything else to teach him what people wanted, and how to supply their wants,—that thus it helped him greatly towards being a successful editor and publisher. The same exercise will help you in any other calling.

Laying Out Places.—It happens a number of times every year that our friends who desire to improve their old places, or who propose to establish new ones, send a sketch of their grounds as they are, and ask us to give a plan for laying them out, some going so far as to ask us to designate every tree and shrub, and where they are to be planted. Take these plans on the average, it would need at least a whole working day (10 hours) to each, if we were to give the study and care necessary to do the work properly, and this is much more time than we can devote to any one person. Taking this view of the matter, our friends will see that we decline, not from any unwillingness to be of aid to them, but because they ask that which we have not to give—time. In our book-list will be found several books on the subject of landscape gardening, including Weidenmann's "Beautifying Country Homes," which, though somewhat expensive, would be a good investment for any one intending to reconstruct an old place or construct a new.

Sheep at the Vienna Exposition.—We have received a copy of the report on Sheep and Wool at the Vienna International Exposition, by J. R. Dodge, which, although its appearance is somewhat tardy, is of great interest to sheep breeders and others

interested in sheep culture and wool production. It is an epitome of the history and characteristics of European sheep, of which the Merino occupies the largest portion. The English mutton breeds, with their foreign crosses, are described at length, and a description of some little known varieties is given in an interesting manner. The pamphlet is a contribution to the natural and economic history of the sheep, which is well worth study and preservation for reference.

Wheat Growing in England.—English farmers are grumbling just now more than is usual with those proverbial grumblers. Wheat is only five shillings sterling a bushel, equal to $1.25, a price that makes its growth unprofitable. The remedy proposed is to lay down all those lands that are suitable to grass, and raise cattle. The point of interest to American farmers is this, that at the present price of wheat there can be no profitable competition by English farmers, and that the lowest possible price has been reached. If we can make wheat growing pay at the present prices, and English farmers can not, we have a decided and permanent advantage, and there can be but little danger of prices going any lower than they now are. The outlook now seems to be that prices are at the lowest, and there will be an increasing demand for our grain; at the same time the cost of everything the farmer uses is lower than for many years. If we can then increase the yield of our crops, our position, fair as it now is, will be improved in an equal ratio, and this is a comforting reflection to the energetic and skillful farmer, who is the one to gain most from these circumstances.

The Common Reed.—The flowering tops of the Reed, *Phragmites communis*, the tallest grass of Northern marshes, is now largely sold as an ornamental grass. If the spikes are cut very early, before the flowers open, they make very pretty and serviceable dusting brushes.

Seed Potatoes.—F. Jackson, Henry Co., O., asks "why not plant the whole seed of potatoes as well as other vegetables?"—What we call "seed" of the potato is not a proper seed, but a stem. We only raise potatoes from seed when we sow the contents of the seed-ball; in the ordinary way we really grow potatoes from cuttings, and not from seed. That, as our correspondent suggests, the continued planting of small potatoes will in time injure the variety, we do not doubt, but as to cutting the "seed," if an eye has a sufficiently large piece of the tuber to sustain the shoot until it forms roots and can maintain itself, it is as well as if it had the whole potato.

Grass Named.—"F. O. H.," Florence, Miss. The Hedge-hog or Bur-grass, *Cenchrus tribuloides*, common in sandy soil from the great lakes to Mexico, and a real nuisance. Travelers who camp out, do not find it adds to their comfort when it attaches itself—as it is very sure to do—to their blankets.

To Make a Small Compost Heap.—"J. H. C., Jr.," Cincinnati. With one cow or horse the best way to make compost would be to arrange the stable with a floor sloping slightly backwards; one inch in six feet will do. Then have a gutter at the lower end of the stall, and keep that filled with dry earth, sods, swamp muck, leaves, or whatever similar stuff can be gathered. Clean this out each day with the droppings and keep it in a pit two or three feet deep, lined with plank or bricks, or if the bottom is of clay, beaten hard, that will answer the purpose. Then all the waste of the house may be thrown into the pit, and if any smell arises, throw on some garden earth or a pailful of water in which half a pound of copperas (sulphate of iron) has been dissolved. It will be well to dust the gutter with raw ground plaster every day. When the pit is full a pile may be made over it.

Rosendale Cement.—"J. W. O.," Palestine, Texas. When cement, or hydraulic lime, has been exposed to the air and has absorbed moisture, it can only be renovated by another calcination and grinding. It is of no value whatever as a fertilizer.

Broken Legs in Animals.—A valuable Jersey cow in Kentucky, recently received a compound fracture of one of the hind legs, and was treated as follows, with complete success. The cow was laid down upon its side, with the injured leg extended. The broken bones were properly placed, and a piece of canton flannel, cut to fit the limb, was wetted and applied. A bandage 2½ inches wide, (this should be previously made into a roll, with the ends of the strips sown together), soaked with water, was then wrapped smoothly from the foot upwards upon the leg, some distance above the fracture. This was coated with freshly mixed Plaster of Paris (calcined plaster) and water, and six other bandages and alternate coatings were applied, until the leg was inclosed in an immovable envelope as the plaster became set. The cow was kept down until the plaster was hard, when she arose and required no further attention until the bone was properly united. This method of curing fractured limbs has long been in use in hospitals, and the surgeon who applied it in this case does not probably claim it as his discovery, as is attributed to him. We have mended broken legs of fowls, sheep, and calves in a similar way, using common paper, saturated in ordinary starch as prepared for the laundry, over the cloth bandage, and covering it with strips as above. Sufficient layers of brown paper should be used, to give a stiff, firm support to the limb. Newspapers will answer as well as brown paper. When the paper is dry it is as firm as a board. If small animals may be thus treated, larger ones may be also, if careful precautions are used.

Steaming Food for Stock.—"W. L. H.," Elizabethtown, Ky. A method of steaming food for stock, with illustrations, was given in the *American Agriculturist* for January, 1873. A pamphlet descriptive of the process, and giving the experience of several persons who have practiced it, is published by the Orange Judd Co., and is sold for 20 cents, sent post-paid. Those who wish to feed their stock in this way, will find many valuable suggestions in that little work.

The New Jersey Cranberry Growers' Association.—The importance of the Cranberry in New Jersey, is shown by there being a sufficient number engaged in its culture, to form a large association for mutual improvement and coöperation. The Society held its semi-annual meeting, on Sept. 5th, at the "N. J. Head-quarters," on the Centennial Grounds. There was a large attendance, and though some who had nothing to say, would persist in talking, the meeting as a whole was interesting. The committee on "Foreign Trade" reported favorable prospects, and the company recently organized for canning the fruit, have made encouraging sales in England and France. The "scald," a disease as mysterious and as mischievous as the blight in pear culture, was discussed sufficiently to show that no one knew anything about it.

Some Questions from Iowa.—"J. F. R.," Polk Co., Iowa. A Thomas harrow can be used on young corn or any other crop, until it is 8 inches high, without injury to the young plants, or danger of pulling up sods or whatever is plowed under. Corn should be plowed or cultivated as many times as may be needed to free the ground from weeds. If the soil is clear of weeds, it should be cultivated sufficiently to keep it mellow and loose. When a horse can no longer pass through the rows, then cultivation may be stopped. It costs nothing to cultivate corn if there are horses in the stable and the farmer is otherwise idle. Under these circumstances it is folly to charge the corn crop $5 a day for cultivating it and call it lost money....Using a large boar with a small sow, will cause no difficulty in the birth of the pigs. There is a popular but an erroneous opinion to the contrary. In choosing a male breeding animal, large animals that are coarse, bony, and ungainly, should be rejected, but not fine-boned, well-proportioned ones.... Rattle-snakes are the only poisonous snakes in Iowa.... Rye-straw makes the best bands for corn shocks.

Weeds Named.—"R. L. C.," Omro, Wis. No. 1, which you say is called "Stick-fast," "Beggar's Lice," and "Pitch-forks," are the one-seeded fruits or akenes, (usually mistaken for seeds), of *Bidens frondosa*, a common weed at the East as well as the West, and besides the names you give it, is also called "Bur-Marigold."—We do not recollect to have seen the name "Pitch-forks" before, but it was no doubt suggested by the two awns or prongs, by means of which the fruits attach themselves so affectionately to ones clothing....No. 2, for which you have no name, is the "Indian Mallow" or "Velvet-leaf," *Abutilon Avicennæ*, a naturalized foreigner, but now very widely distributed. In the rich lands of Illinois and other Western States, it grows taller than a man, branches widely, and produces a great abundance of seed. Your specimen had nearly ripe seed, which shows that the crop for next year is provided for. —"R. M. W.," Buffalo, W. Va. The plant which you send and describe as over-running your neighborhood is the Thorny Amaranth, *Amarantus spinosus*. It is a very unpleasant weed, but being an annual, there is but little difficulty in keeping it in subjection.

Prof. Glover's Illustrations of Insects.—Prof. Glover, of the Department of Agriculture, has been engaged for many years in accumulating information concerning Insects, and making most exquisite copper-plate engravings of them. Despairing of ever having his work published by the Government, and fearing that some accident might destroy the labor of years, Prof. Glover, a few years ago, commenced the publication of his notes, taking an order of insects at a time. We have now before us the volume on the *Hemiptera*, or "Plant Bugs," which contains 10 large plates crowded with engravings of insects, all drawn and engraved by the author. The text is also in the author's hand writing, it being written upon lithographic paper and transferred to the stones, from which it was printed, a method adopted as cheaper than type for a small edition. An edition of only 50 or 60 copies was printed, which are produced at the author's own expense, and are distributed by him to various Scientific Societies and Agricultural Colleges. The work, like its predecessors, is a wonderful illustration of what may be done by well directed industry, and the author a remarkable example of unselfish devotion to science. Under some governments the author would be rewarded by a pension; under ours, he can hope for no pecuniary compensation, but we trust that his labors in behalf of the agriculturist may be held in grateful remembrance by those for whose good he has worked so long and so faithfully.

Red Water in Hogs.—"T. G.," Kittrells, N. C. The dark colored urine noticed in diseased animals, hogs included, may be caused by inflammation of the kidneys, or the bladder; or by disorganization of the blood in bilious or typhoid diseases, or in consequence of the animal eating irritating substances, as poisonous fungi, smutted corn, etc. The actual cause can only be ascertained by post-mortem examination, and this should be made in all cases of obscure diseases, that measures may be taken to cure or prevent the same trouble in the survivors. If the disease is in the liver, the 15 grains of calomel suggested might be of use.

Insect for Name.—H. A. Berry, Ill. The insect is the Pigeon Tremex, *Tremex Columba*, and is sometimes called Wood Wasp. The strong point which projects from under the belly is not, as many suppose, a sting, but is a complicated and powerful borer, of several parts; the females only have this, and use it to pierce holes in the trunks of trees, in which they deposit their eggs. They prefer the elm, buttonwood, and pear, and bore holes half an inch or more deep; sometimes the insect is unable to withdraw the borer, and is held fast until it perishes. The grubs live upon the wood of the trees, and are, like other borers, injurious; they are not very numerous, and the grubs are often destroyed by the ichneumon flies, which deposit their eggs in the grubs, and the maggot of the ichneumon fly feeds on and finally destroys the Tremex grub.

Horticultural Exhibition in Holland.—An International Exhibition will be held at Amsterdam in 1877, opening probably in April. The Programme of Exhibits, which is very systematic and comprehensive, may be obtained from the Secretary General, H. Groenewegen, 5 Oetewalerweg, Amsterdam.

Feeding Apples.—"P.," Franklin Co., Mass. Apples are very healthful and agreeable food for stock of all kinds, and rather than sell them for a few cents a bushel, we would feed them. They may be kept by pitting them, as is done with potatoes, and covering with straw and earth. If put in small pits, one may be opened and used at a time. We would rather feed them separately than boil them with roots or corn, as then they will help the appetite for other food. A peck a day would be a moderate quantity to feed one cow or pig. When feeding pumpkins and potatoes boiled, we would give some corn whole and dry. Some dry feed makes more solid pork than when all the food is cooked.

Excrescence on the Skin of a Heifer.—"J. J. H.," Marietta, Ga. It would be wise to deal carefully with an excrescence beneath the belly of a heifer. It may possibly be a rupture of the abdominal sac. If only a growth upon the skin, it may be removed with the knife by a surgeon, but if it is soft, and can be forced backward into the abdomen, it should be treated by a competent person, or the animal may be sacrificed.

Preparation for Coloring Butter.—"J. F." For coloring butter in repacking it, the liquid preparation of annotto will not answer the purpose desired. A preparation for this purpose is made by rubbing up a small quantity of annoto, which may be procured of the druggists in the form of paste, in melted butter, until a smooth even colored mixture is made. This is added to the butter to be repacked in only such a small quantity as may be required—one ounce to six or ten pounds, according to the paleness of the butter, and is evenly worked in with the butter worker. If lard, turmeric, or salts of tartar, are used, as proposed, the flavor of the butter will be injured, unless the butter is so bad that these are really an improvement to it. The methods in use of flavoring and improving poor butter for repacking, are not given in any book on butter-making, as this process is not dairying in any sense. If the dairying were done properly, this process would not be needed.

Notes of Special Exhibition of Live Stock, etc., at the Centennial.

THE SHEEP exhibition at Philadelphia was not an encouraging one, excepting in regard to the American Merinos, which were there. Not one pen of American Cotswolds was shown, nor any sheep except Merinos, which might claim to be American. Neither were there any of the cross-bred sheep which have been produced by our energetic and skillful breeders. The most noticeable animals were some monstrously fat Southdowns and Cotswolds from England, which were, to our thinking, examples of a vicious breeding which should be discouraged. The Southdowns of Lord Walsingham were masses of tallow, covered, it is true, with a beautifully smooth fleece, but they were not useful sheep, and cannot be maintained here in the condition in which they were shown. The same may be said of the Cotswolds of Mr. Russel Swanwick, with the exception that these were very unsatisfactory as to fleece; the wool being open and thin on their broad backs; a usual objection to overgrown long-wools. It is scarcely to be regretted that these sheep sold at very unprofitable prices, hoping as we do to see no more importations of this kind. It is time for us to devote our attention to breeding American sheep and imitate the Merino breeders, who have surpassed the rest of the world in producing fine wools. The Merinos on exhibition were too good to have been neglected for the foreign sheep. Vermont sent a fine lot of animals; one ram, bred by E. S. Dana, was sold to go to Ohio for $650; a ram was shown by L. P. Clark, from which a fleece weighing 37 lbs. was sheared last season. The premium flock was shown by Sam'l. Archer, of Kansas City, Mo. Sheep were exhibited also from Ohio, Pennsylvania, Wisconsin and New York. The Silesian Merinos of Mr. Chamberlin and Carl Heyne, of Dutchess Co., N. Y., were on exhibition. Meetings of the Sheep-breeders were held, at which it was proposed to institute a National Sheep Fair at an early date, and the "National Sheep-breeders and Wool-growers Association" was requested to take the necessary action for this purpose.

SWINE.—Amongst these the Berkshires took the lead, the Chester Whites taking the second place. Some fine imported Berkshires were sold on the ground at very reasonable prices.

THE DAIRY EXHIBIT, notwithstanding all the difficulties and opposition which the managers have experienced, was a very fair one. More than 400 cheeses from Canada were on the tables, and a large number from American dairies. The rooms were more densely crowded at times than almost any other buildings on the ground; one of the attractions being the cheap restaurant on the upper floor of the dairy house.

THE POULTRY SHOW was large and fine, notwithstanding the number of empty coops. Pigeons were numerous and of a high class. Mr. L. Waefelaer, of Hoboken, N. J., showed a coop of Antwerp Carriers that had flown 245 miles, also some very beautiful fancy fowls, such as Golden and Silver Pheasants. Toulouse Geese weighing 50 lbs. the pair, Rouen ducks, of 18 lbs. the pair, and Black Cayugas of 14 lbs., were shown by W. H Todd, of Vermillion, Ohio; besides these, this breeder exhibited largely of other poultry. Benson and Burpee, of Philadelphia, showed fine Light Brahmas, Plymouth Rocks, Houdans, and other breeds, numbering in all 60 coops. The Brown Leghorns of J. E. Kinney, of Worcester, Mass., were fine as usual. He had one hen, 10½ years old, which had laid over 2,000 eggs; and another, 6½ years, that had produced 1,000. Fine specimens of La Fleche were shown by P. Williams, Taunton, Mass, and some Black Hamburghs of extra quality, by J. C. Pennington, of Paterson, N. J. On the whole the Poultry was a fine exhibition, and seemed to be very attractive, although it was in an out of the way building. We regret we have not space to notice further the large variety of fine birds shown.

Bee Notes for December.

BY L. C. ROOT, MOHAWK, N. Y.

If bees were placed in winter quarters in due time, and in proper condition, they will need no other attention the present month, than to observe the necessary conditions. These are as follows: the room should be kept perfectly dark, and the temperature as near 45° as possible. Let the thermometer be so arranged that the temperature can be ascertained without entering the room. I have usually attached a small round thermometer to a cord, and let it down through a hole in the floor into the bee-cellar; it can thus be examined many times a day without disturbing the bees in the least. Perfect quiet is at all times essential.

Questions and Answers.

"Should bees be confined to their hives during winter?"—Wherever bees may be placed for winter, they should not be confined to their hives. If the proper requirements are observed, they will not leave the hive, but if confined by wire-cloth, although well ventilated, they will become uneasy, and I have often known very serious results from a failure to observe this point.

"How much honey will a swarm consume during winter?"—From 5 to 25 lbs., according to circumstances. If wintered in an even temperature of about 45°, and in perfect quiet, they will remain nearly dormant, and consume very little food, but if often disturbed, or kept in a cold and uneven temperature, the quantity consumed may reach even more than 25 lbs. I have wintered over 100 swarms, that consumed less than 10 lbs. on an average. No one, however, should infer from this fact that it would be safe to allow bees to go into winter quarters with only this amount. Occasionally a swarm will consume much more, and to meet this exigency, at least 20 lbs. should be supplied. If not needed during the winter, it will be ready for use in spring breeding.

Bee-keeping at the Centennial.

As is usual, this branch of industry was very sparingly represented at the Centennial Exhibition. Those who made an effort for a special display in this department, deserve particular credit. Mr. J. S. Coe, of New Jersey, was, as far as we were able to ascertain, the only party who exhibited bees. The colonies were arranged in what he calls his "House Apiary," and he has been earnest and successful in representing his system of management. J. S. Harbison, of San Diego, Cal., exhibited a case of his honey in small frames, illustrating his modes in regard to form and style of packages. Geo. Neighbor & Son, of London, Eng., exhibited a line of fixtures fully illustrating the state of apiculture in that country. Capt. J. E. Hetherington, of Cherry Valley, N. Y., was the largest exhibitor of honey. When it is remembered that the package exhibited by Mr. H. is only a sample of those he has in general use, and that the neatness and perfection of their manufacture are only an illustration of his mechanical skill, as practiced in all branches of his business, the inference that his standard of excellence in this respect, is second to none, will be a just one. There may have been other exhibits worthy of mention, but not being concentrated in one general department, they escaped notice.

Preparing Poultry for Market.

Every fall we are asked about preparing poultry for market. There are in the back volumes several elaborate articles giving full details, but new subscribers have not, generally, access to these, and their requests make it necessary to give something on the subject at the present time. We cannot do better now than to reproduce the directions sent to their customers by Messrs. E. & O. Ward, 279 Washington street, one of the oldest commission houses in New York City. Though very brief and concise, it gives the results of an extensive experience and presents all the essential points. They say: "To insure highest market prices for poultry, they must be well fattened; crops empty when killed; nicely and well picked; skin not broken or torn; entrails should not be removed: thoroughly cooled, but not frozen. Pack in boxes with a layer of clean straw (rye straw the best) between the layers of poultry, in the same posture in which they roost. Mark each box, specifying what it contains. Send invoice by mail. Ship to reach us about the middle of the week—should never reach us so late in the week as on Saturday.

There is the greatest demand on special occasions for fine and fat turkeys for Thanksgiving; prime and nice geese for Christmas; extra large and nice turkeys for New-Year's Day. On all these occasions shipments should reach us two to five days in advance. If you cannot find any profit in sending *prime* quality and well prepared, you need not look for any in ordinary or poor qualities."

Observe that these rules apply to the New York market; if intending to ship poultry or other produce to other cities, it will pay to find out in advance the requirements and customs as to manner of putting up, kind of packages, etc., for their markets. For example, if poultry is sent prepared as above to Boston, Providence, or other New England cities, it would bring very poor returns; in those places the people expect the birds to be drawn, *i. e.*, the entrails to be removed; the styles of packages for fruit, etc., also vary greatly, and a compliance with established customs is necessary if one would get the best prices.

Catalogues Received.

NURSERYMEN.

CHAS. BLACK & BRO., Hightstown, N. J. Fruit and Ornamental trees, Small Fruits, etc.

E. W. HARRINGTON, Palmyra, Wayne Co., N.Y. Small Fruits, Fruit-trees and Root-grafts.

WILLIAM PARRY, Cinnaminson, N. J. A general stock, including several specialties, such as Brandywine and Delaware Raspberries, and Mr. Durand's remarkable new Strawberries.

PURDY & DORLAND, South Bend, Ind. General assortment of Small Fruits.

B. F. TRANSOU & BRO., at the "Humboldt (Tenn.) Nurseries," send a wholesale list of their extensive stock.

EUROPEAN CATALOGUES.

WILSON & RANKIN, Glasgow, Scotland. Agricultural and Garden Seeds at wholesale.

IMPLEMENTS AND MISCELLANEOUS.

THE AMES PLOW CO., New York and Boston. A special catalogue of Hupgood's Patent Swivel Plows.

A. B. COHU, 197 Water St., New York. An elaborately illustrated catalogue of Farm Implements and Machinery, including a list of farm and garden seeds.

EDWARD BURNETT, Southborough, Mass. A catalogue of the products of Deerfoot Farm. We can only remark in passing, that this is a remarkable instance of successful farming in a "worn out" country like New England, when its hams, bacon, sausage, and many other things, are in such demand as to warrant a priced catalogue.

A Centennial Commendation.

[Mr. C. J. Fay, of Camden, N. J., makes building papers of various kinds. The editors are not personally acquainted with Mr. F., though some of them know and have used his articles. Under these circumstances their surprise was only equalled by their gratification at receiving the following wholly unsolicited and unexpected pleasant words. They take the liberty to print it, that the many new subscribers may see the voluntary commendation of one, who has "summered us and wintered us" these many years—EDS.]

"CAMDEN, N. J., Sept. 9, 1876.

"MESSRS. ORANGE JUDD COMPANY.

"*Gentlemen:*—Having a desire for a long time to drop you a few words relative to the *American Agriculturist*, I have resolved not to let the Centennial year pass without doing so. I wish to say that I have taken this valuable journal from its very birth. * * * * Not having a relish for political reading, have kept myself pretty well supplied for the last fifty years with scientific and agricultural publications. I am satisfied that I have derived more useful information from this journal, than from all other agricultural ones combined. I advertised in its columns occasionally, some twenty-five years ago, and for the last ten years think my card has appeared in every number issued. At first I thought its rates too high, but time changed this opinion. Notwithstanding the cost of advertising during this time appears in the aggregate a large sum, I have the satisfaction of knowing, that the money has been beneficially laid out for myself, and I think a still greater benefit to thousands of your patrons, who have through its columns learned where they could obtain our useful and cheap building materials. Parties have written us that had they not seen our card in the *American Agriculturist*, they would not have ventured to send us the money before receiving the goods, which is a convincing proof of their confidence in the journal. I am pleased to add that, in looking over my books carefully, I find that the cost of advertising in this journal is several per cent. cheaper than in any other leading publication in which I advertise. I close with the hope that the tide of prosperity may ever follow the wake of this valuable journal, and remain, Very truly yours, C. J. FAY."

Eye-Cups Once More.—Inquiries still come as to eye-cups, from persons who think of trying them, and from those who have been solicited to act as agents for their sale. Articles called "eye-cups" are no novelty, they have been made and offered by various parties for several years. When first advertised, notwithstanding that some respectable names were used on the circulars of the venders, our own impression was that the articles were such as should not come into general use, but before publishing our views, we consulted with an occulist, who is an authority, not only in this country, but in Europe. He fully confirmed our opinion, and expressed his objections to the cups in the most positive manner. These eye-cups propose to alter the convexity of the eye. Admitting that they can do this, (which we do not), they could only be of use in a particular class of defects. The danger with the eye-cups, as with the various advertised remedies, lies in the fact that they induce people to treat themselves, without first finding out what is the trouble. The eye, of all organs, should be let alone by all who have not the knowledge and the skill to treat it understandingly. An intelligent person, who will properly consider the matter, will see the absurdity of attributing all difficulties of vision to a mechanical defect of the eye-ball. We regard all tampering with one's own eyes, by the use of eye-cups or any other applications, as highly dangerous, and which, for the safety of the community, should be discouraged.

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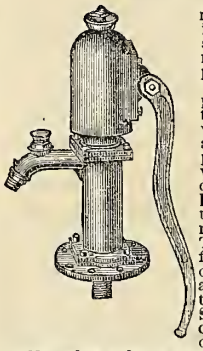

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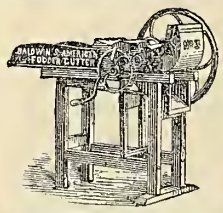

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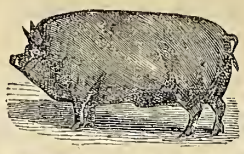

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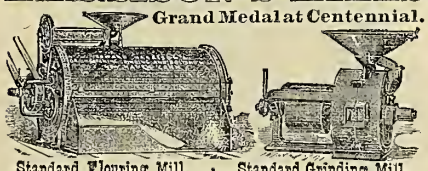
HARRISON'S MILLS

Grand Medal at Centennial.



Standard Flouring Mill.
Cleaner Grinder and Bolter.
Ordinary size, 9 feet by 4 feet
Capacity 5 bushels per hour.
Finest flour, largest yields.
Cooled by a strong air blast.
Runs at one-tenth the cost
Of the old style mills.
Compact, practical,
Substantial, and very durable.

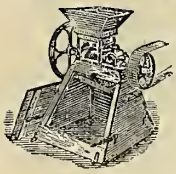
Standard Grinding Mill.
For all substances wet or dry.
Built of burr stone and iron.
For heavy or light power.
10,000 in operation.
Grind 75 bushels per hour.
Thickest French burr stones.
Double discharge spouts.
Adjustable babbitt boxes.
Solid self-adjusting burrs.

These Mills excel all others, even compared with those of double the size, double the weight, and double the price.

EDWARD HARRISON, Patentee and Sole Manufacturer, 135 Howard Avenue, NEW HAVEN, CONN.

MEDAL & DIPLOMA AWARDED

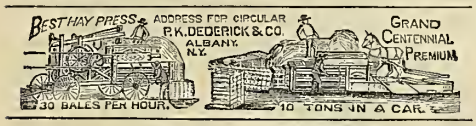
To WM. L. BOYER & BRO.,



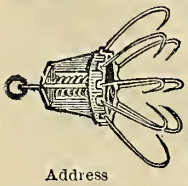
Philadelphia, Pa.,
ON THE
Premium Farm Steel Grist Mill,
BY THE
U. S. Centennial Commission of the International Exhibition,
HELD IN PHILADELPHIA, 1876,

Extract from Report of Judges.

For strength and durability of wearing parts, for efficient operation and suitability either for grain or Indian Corn. This is a Conical Mill, working horizontally, with fluted sections; concave has also raised surfaces. Edges sharpened by contact; Material, cast-steel.



SMITH'S
"Eagle Claw of '76."



A safe and ingenious device for catching fish, animals, game, &c. Sample No. 1, 50 cts. Sample No. 2, 75 cts., by mail, or send for circular.

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Patent Concave Ox-Shoes.

The only forged ox-shoe made with *concavity* to fit hoof, and the best and cheapest.

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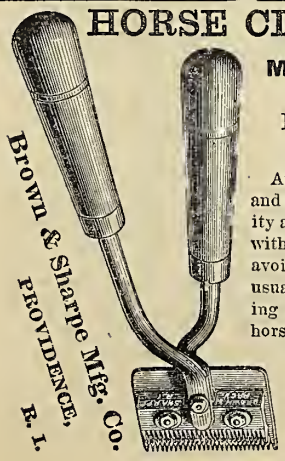
HORSE CLIPPING

MACHINES.

Price, $5.



Are carefully made, and are of such a quality and form as to work with smoothness, thus avoiding altogether the usual irritation attending the shearing of horses.

Orders filled by mail.

Postage, 25 cents extra.

THE BALDWIN CUTTER

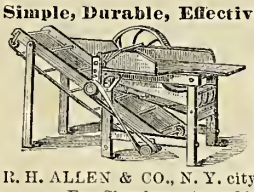
is the best in market for
HAY, STRAW, AND STALKS.
9 sizes, from $18 to $90, for hand or power. Our new circular is just issued. Address, with stamp,

R. H. ALLEN & CO.,
P. O. Box 376. 189 & 191 Water Street, NEW YORK.

Also Improved **Root Cutters, Corn Shellers,** and every variety of **Agricult'l Implements & Machines.**

PHILIP'S SPIRAL
CORN HUSKER.

Simple, Durable, Effective, and works rapidly.



This machine, improved and perfected, does its work thoroughly, picking the corn from the stalk and stripping every ear, large or small, soft or hard, completely of its husks and silk. Any ordinary two-horse power will run it.

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AUTOMATIC WAGON BRAKE

The most powerful self-acting brake made, and yet is more simple and complete than any ever introduced for general use. The Brake has been fully endorsed by every farmer who has seen it operate. W. A. Armstrong, Sec'y Elmira Farmers' Club, writes: "A Committee of the Elmira Farmers' Club, consisting of Chas. Heller, John Bridgman, D. T. Billings, S. M. Carr, and M. H. Thurston, gentlemen fully competent to make intelligent judgment, gave the brake careful trial Aug. 21st, and reported unanimously: It is the best brake we have ever seen—prompt in its action—effective when required, and is exceedingly desirable for all farmers on hilly farms." See Illustration in Aug. *Am. Agriculturist.* Town, County, and State rights for sale. Please say where you saw this.

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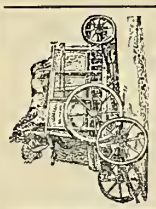

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STOCK RAISERS, FEEDERS AND OTHERS,
The J. I. CASE & CO., Racine, Wisconsin
TREAD POWER
WILL CUT OR GRIND MORE FEED THAN ANY IN USE.
ADAPTED FOR
SAWING, ELEVATING, DRILLING AND SHOP PURPOSES.
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FARMERS You want the Best. Send for Circulars of the "Common Sense" Stalk, Hay, Straw and Vegetable Cutter.

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The Level Tread Horse Power. do.
Ice Tools of every description.

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Matthews' Garden Seed Drill,

Matthews' Hand Cultivator, Matthews' Drill and Cultivator combined, surpass all others. Send for circular before you buy. Manufactured only by

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The Anti-Friction Hay Carrier

Saves labor and money. It is simple; the grappling positive; it runs on friction rolls, hence will come back on slight incline. The track is inexpensive; the carrier costs but a trifle; many hundreds are in use. No trouble about getting over high beams, or to the end of deep bays. Hay is dropped where wanted, and the work of mowing is reduced. Track should be put up now while barns are full.

Send for circulars and designs for tracking barn, to U. S. Wind Engine & Pump Co., Batavia, Ill., manufacturers of the Old Reliable Halladay Standard Wind Mill.

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Sole Agents for Alex. Hornby's Steam-cooked White Wheat and Oat Meal. **No. 279 Washington-st., N. Y.**
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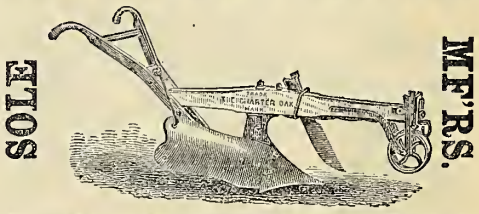
SWIVEL PLOW.



The Only Perfect Swivel Plow.

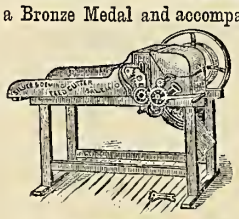
The Season of 1875 has proved by actual use of over 300 plows that it has no equal.

Send for illustrated circular with full particulars to

THE HIGGANUM M'F'G CO., HIGGANUM, CONN.

The United States Centennial Commission
AWARDED THE
"Silver & Deming Feed Cutter,"

a Bronze Medal and accompanied it with a special report.



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For a Safety Fly Wheel arrangement. The wheel being fixed to the shaft by a friction cone.

In the event of iron or other hard substance getting into the feed, the Fly Wheel revolves but knife stops.

Also for a single plan of changing the cut by shifting cluster of gear wheels.

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(Attest.) J. L. CAMPBELL, Secretary.

Manufactured only by SILVER & DEMING MANUFACTURING CO.,
Send for Circular. **SALEM, OHIO.**

HAY AND STALK CUTTER
FOR $6.

The best Lever Cutter, with gauge, so as to cut various lengths, sold at a price demanded by the times, viz.: SIX DOLLARS. Send cash with order to

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The first Self-Regulating Wind Mill offered the markets of the world, and when material used, workmanship, power and durability are considered, it is acknowledged to be **THE CHEAPEST.**

It has been manufactured under immediate supervision of inventor for more than twenty-two years.

$3,000,000 Worth NOW IN USE.

A 58 page Illustrated Catalogue with Price List will be sent free to all who make application.

Agents wanted in all unassigned counties.

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BLAKE'S PATENT
Stone and Ore Breaker

Crushes all hard and brittle substances to **any required size.** Also, any kind of STONE for ROADS and for CONCRETE, &c. Address BLAKE CRUSHER CO., New Haven, Conn.

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we will with pleasure send you a sample copy of our Monthly "GLEANINGS IN BEE CULTURE." Simply write your address plainly on a postal card and address A. I. ROOT, Medina, Ohio.

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Samples of Cloths, **Fashion Plate,** with full directions for ordering Clothing by mail—*fit guaranteed*—by

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CLOTHIERS, { **241 Broadway, New York.**

Specialties in Ladies Underwear.

CONSTRUCTED ON HYGIENIC AND DRESS REFORM PRINCIPLES.

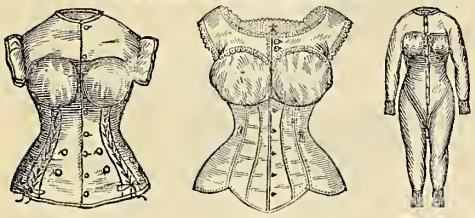

Fig. 1. Fig. 2. Fig. 3.

Fig. 1 represents the Emancipation Waist—the most perfect of all hygienic garments of its kind. Made in ladies' sizes only. Plain, $2.00. Trimmed, $3.25.

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Goodyear's Pocket Gymnasium.

ENDORSED BY THE MOST EMINENT PHYSICIANS.

The Most Complete System OF PHYSICAL EXERCISE Ever Devised for Home Practice.

100,000 in use by men, women and children.

Used standing, sitting or reclining.

Hundreds of graceful movements.

For home, office, schools, hospitals.

Price List.—No. 1, for Children 4 to 6 years, $1.00. No. 2, for Children 6 to 8, $1.10. No. 3, for Children 8 to 10, $1.20. No. 4, for Children 10 to 14, $1.30. No 5, for Ladies and Children 14 years and upwards, $1.40. No. 6, for Gentlemen of moderate strength, $1.50. No. 7, used by Ladies, Children or Gents, $2.00. No. 8, for Gentlemen of extra strength, $2.50. Full set, *family use*, 1 each, (1 to 6) Two 7's and Two 8's, $16.00. Nos. 7 and 8 are fitted with a screw-eye and hook to attach to the wall or floor. A pair of No. 7, ($4.00), or 8, ($5.00), make a complete Gymnasium and Health Lift. Sent post-paid on receipt of price. Exclusive Agencies granted in unoccupied territory.

Exclusive rights to sell the Pocket Gymnasium afford the largest possible returns for small investments. Its sales are nearly universal wherever it is placed before the public and its merits fully understood.

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Only the purest vegetable oils used in its manufacture. No artificial and deceptive odors to cover common and deleterious ingredients. UNRIVALLED FOR THE TOILET AND THE BATH. Used in bathing children, will prevent eruptions, keep the skin soft and smooth, contribute to health, and prevent disease. Does away with all powders, chalk or other emollients. A certain preventive of *chafing, itching, &c.*, in babies, the causes of half the crying and crossness of babyhood. Worth ten times its cost to every mother and family in Christendom; packed in boxes of 12 cakes, of 6 ozs. each, and sent free to any address on receipt of $2.50. Address **B. T. Babbitt,** NEW YORK CITY.

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STOVE DRESSING.

NO DUST! NO SMELL!

ALWAYS SOFT AND READY FOR USE WITHOUT A DISH.

It will do more work with less labor and expense, and give a more elegant and lasting lustre than any Stove Polish ever produced. *A stove can be dressed on delicate carpet without soiling it.* Send 10 cents for sample package.

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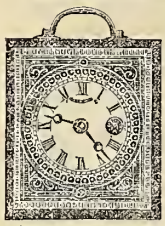

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(Box board case, double; imitation morocco; 4½ in. high, 4 in. wide.

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(Solid black walnut or maple case; 6 in. high, 4½ in. wide.

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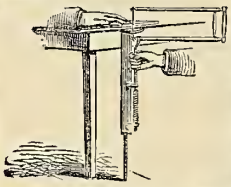
The qualities marked with their name are confidently recommended.



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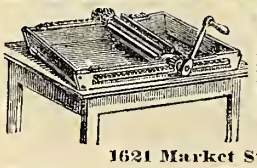

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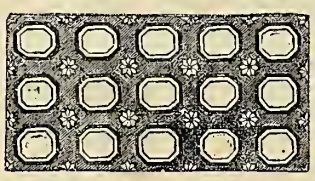

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Established in 1852. Market reports and shipping directions sent *free* on application.

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BRANSON KNITTER, $20.

Simpler and much easier learned than any Sewing Machine. Work surpasses that made by hand. Canvassers make traveling expenses by work which they do in showing the Knitters.

AGENTS WANTED—SEND FOR CIRCULAR.

Branson Knitting Machine Co., Limited.

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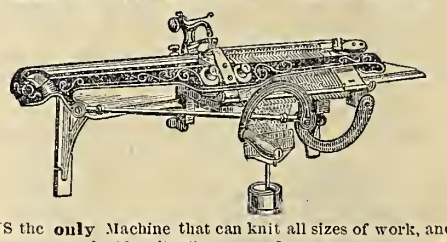
LAMB KNITTING MACHINE.



IS the **only** Machine that can knit all sizes of work, and narrow and widen it; that can **shape** and COMPLETE, without hand-finishing, seamless Hosiery, Gloves, and Mittens, or knit them in **all sizes;** or knit Ribbed, Double, and Fancy stitches for Underwear, Jackets, Shawls, Scarfs, etc. It knits over **25** different Garments. Over **100** per cent Profit in Manufacturing Knit Goods. The Farmer trebles the value of his Wool by converting it into Knit Goods. Women make **$5.00** a day with it. Agents wanted. Send stamp for Samples of work, and **reduced** Price-List. Address LAMB KNITTING MACHINE CO., at Chicopee Falls, Mass.; Cincinnati, O.; Chicago, Ill., or 922 Chestnut St., Philadelphia.

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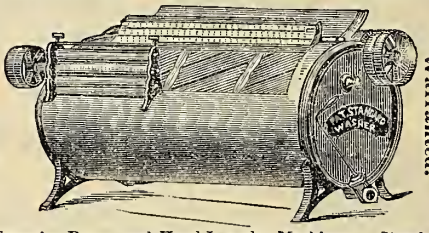
STANDARD LAUNDRY MACHINERY CO.

RECOMMEND THEMSELVES. Warranted.



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Readily attached to any Stove.

Introduced 9 Years.

Thousands in Use. Once used, never dispensed with.

Agents Wanted

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American Manufacturing Co., 102 Orange St., NEW HAVEN, Conn.

See December number, 1874, page 463.

FIRE on the HEARTH.

Ventilation of a Fire-place.

Radiation of a Stove.

Circulation of a Furnace.

Pure Air and an even Temperature.

Centennial Award.

The Open Stove Ventilating Co.,

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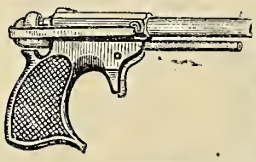

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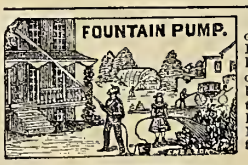

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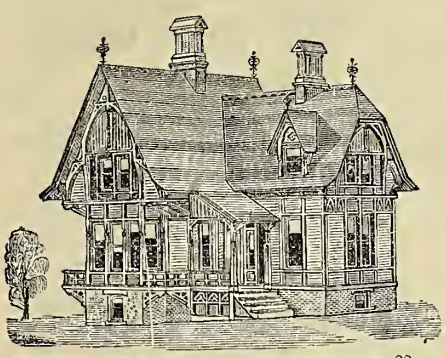

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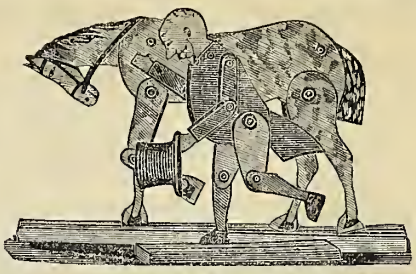

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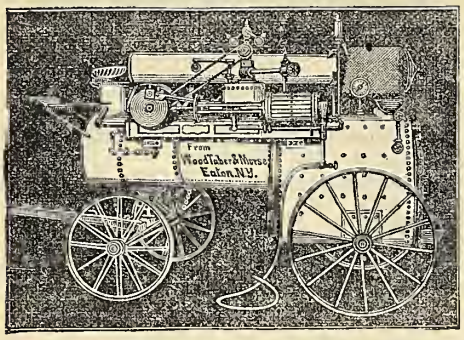

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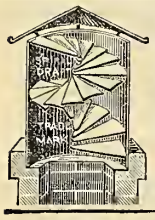

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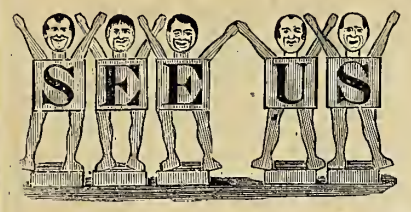

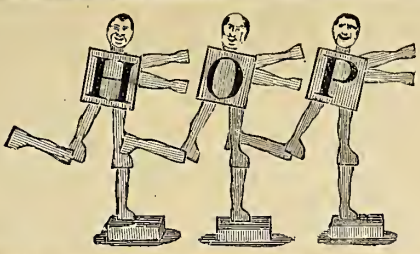

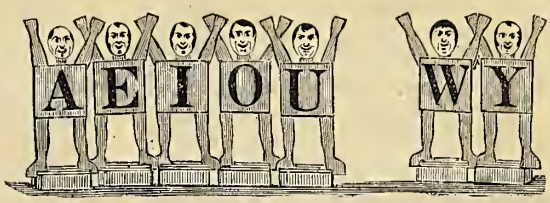

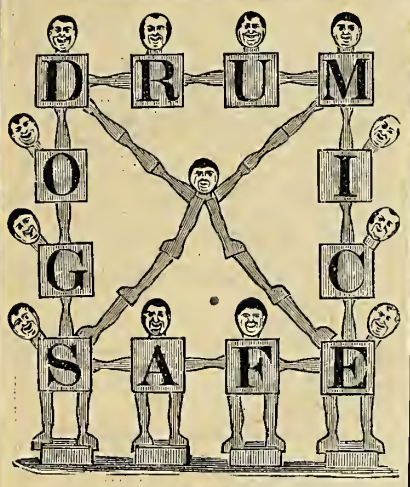

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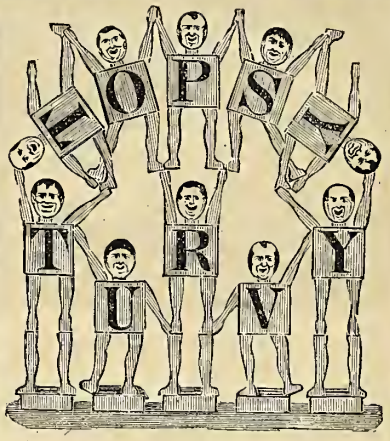

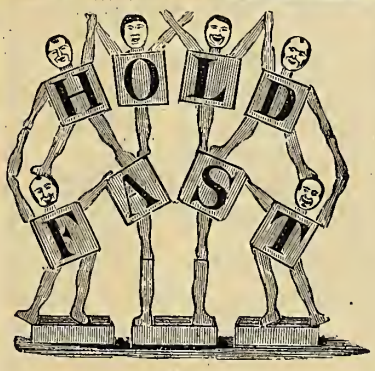

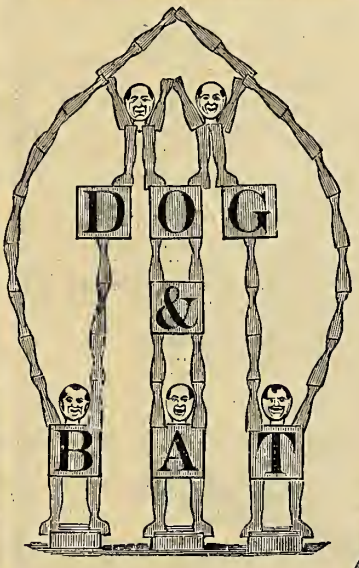

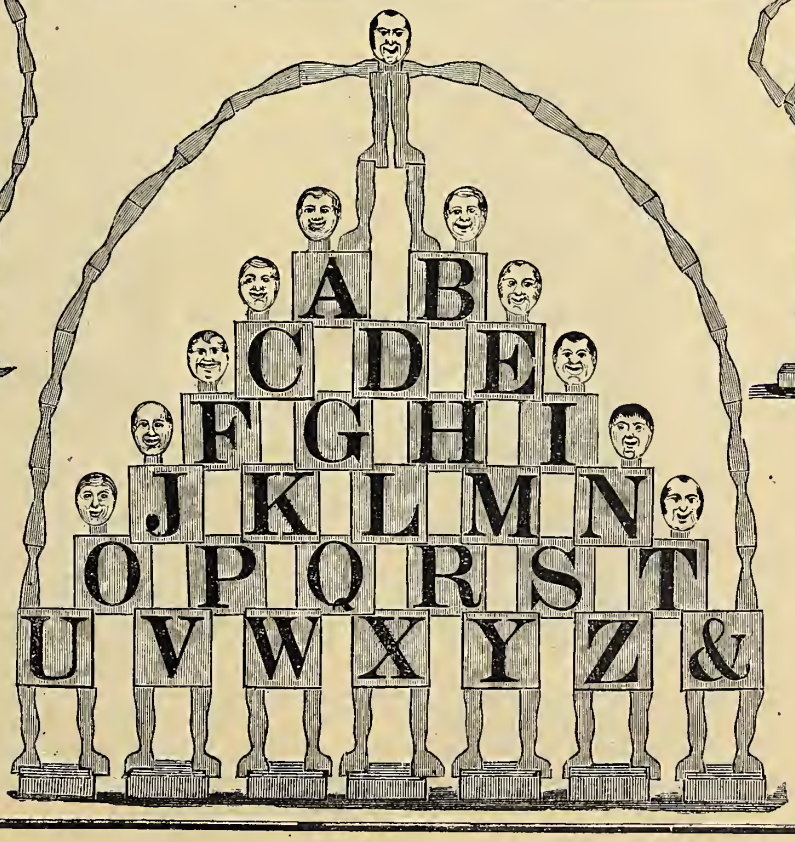

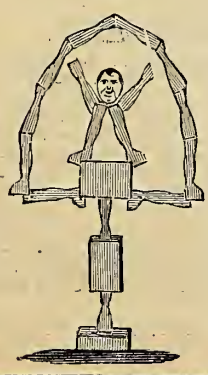

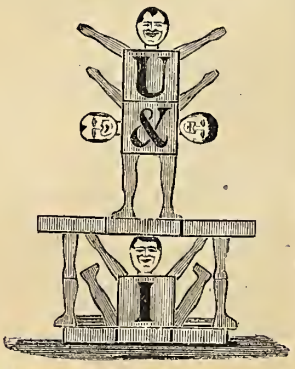

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